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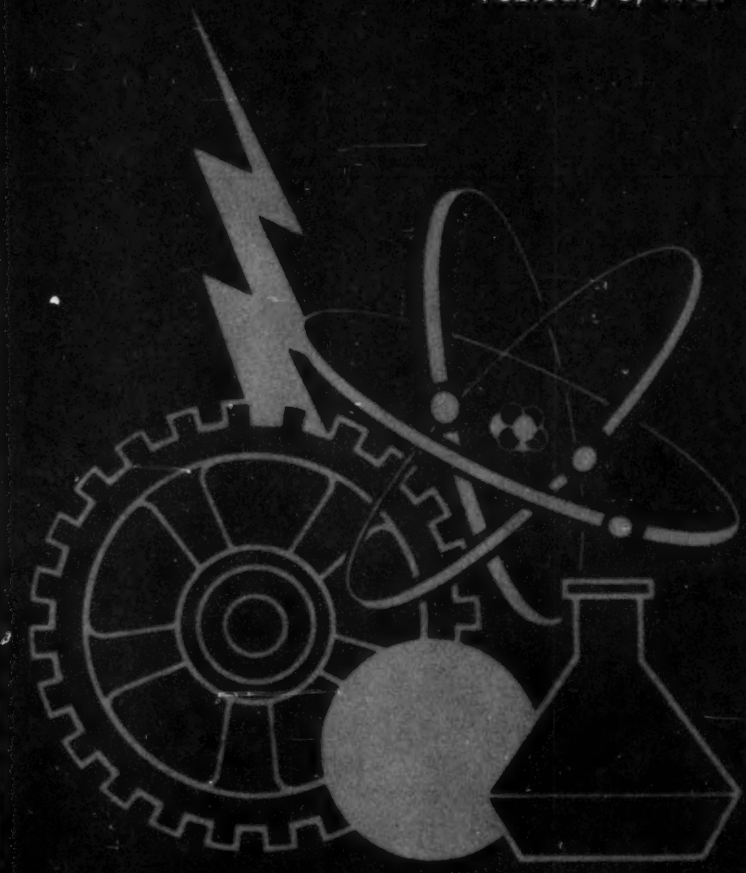
PATENTS

February 3, 1981



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OFFICIAL GAZETTE of the
UNITED STATES PATENT and TRADEMARK OFFICE

February 3, 1981 Volume 1003 Number 1

CONTENTS

	Page
Patent and Trademark Office Notices	
Patent Cooperation Treaty (PCT) Information	1003 OG 2
National Inventor's Day	1003 OG 2
Board of Appeals Decisions Rendered in the Month of December 1980	1003 OG 2
Registration to Practice	1003 OG 2
Patent Suits	1003 OG 3
Reissue Applications Filed	1003 OG 5
Public Law 96-517 96th Congress	1003 OG 7
Patent Certificates of Correction	1003 OG 22
National Technical Information Service	1003 OG 22
Reference Collections of U.S. Patents	1003 OG 24
Condition of Patent Applications	1003 OG 25
Defensive Publications (100,301)	3
Reissue Patents Granted (30,499)	7
Plant Patents Granted (4,636)	7
Patents Granted	
General and Mechanical (4,247,957)	9
Chemical (4,248,590)	225
Electrical (4,249,032)	349
Design Patents Granted (258,095)	429
Index of Patentees	PI 1
Indices of Applicants of Reissue, Design and Plant Patentees	PI 45
Indices of Applicants of Defensive Publications	PI 47
Classification of	
Patents (Including Reissues)	PI 49
Designs, Plants and Defensive Publications	PI 52
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 53
Designs, Plants and Applicants of Defensive Publications	PI 54
Change of Address Form and Subscription Order Form	Back Page

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT consult the notice entitled "update of information concerning the Patent Cooperation Treaty" appearing in the OFFICIAL GAZETTE of July 15, 1980.

Note that since August 1, 1979 certain fees for the processing of International Applications have been increased. The current schedule of fees is as follows:

Transmittal fee	$35.00
Search fee	300.00
Basic fee (first 30 pages)	190.00
Basic fee supplement (each sheet over 30)	3.50
Designation fee	45.00

SIDNEY A. DIAMOND,
June 17, 1980. *Commissioner of Patents and Trademarks.*

National Inventor's Day

The Patent and Trademark Office, along with the National Council of Patent Law Associations, will co-sponsor National Inventors Day in the Public Search Room on Saturday, Feb. 7, 1981, from 1:00 p.m. to 5:00 p.m. and Sunday, Feb. 8, 1981 from 10:00 a.m. to 5:00 p.m. The public is invited to view the exhibits on these days and to attend the ceremony at 2:00 p.m. on Sunday, Feb. 8, 1981 during which time a number of inventors will be inducted into the National Inventors Hall of Fame.

In order to assemble the exhibits it will be necessary to close the Search Room on Friday, Feb. 6, 1981 at 5:00 p.m. We would appreciate the cooperation of all users of the Search facilities by removing all personal property for the early closing.

SIDNEY A. DIAMOND,
Oct. 29, 1980. *Commissioner of Patents and Trademarks.*

Board of Appeals Decisions Rendered in the Month of December 1980

Affirmed	148
Affirmed in part	18
Reversed	67
Total	233

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds, should be furnished the Commissioner of Patents and Trademarks on or before March 20, 1981.

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Jan. 6, 1981. *Chairman, Committee on Enrollment.*

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Patent Suits

Notices under 35 USC 290; Patent Act of 1952

2,625,607, Eckert, Jr., Sims, Jr., and Welsh, PULSE RECORDING APPARATUS; **2,686,100,** same, **filed** Sept. 15, 1964, D.C. Md. (Baltimore), Doc. 15824–W, *Sperry Rand Corporation* v. *Control Data Corporation.* Action dismissed with prejudice with each party to bear its own costs on Oct. 2, 1980.

2,686,100. (See 2,625,607.)

3,144,833, Christoff and Peppin, RAILROAD TRACK WORKING EQUIPMENT; **3,170,410,** James W. Christoff, APPARATUS AND METHOD FOR ALIGNING RAILROAD TRACKS, **filed** Nov. 4, 1980, D.C. Minn. (Minneapolis), Doc. 4–80–553–C, *Loram Maintenance of Way Inc.* v. *Railway Track-Work Company, Inc. et al.*

3,146,144, Jerome H. Lemelson, PRINTING PROCESS, **filed** Oct. 27, 1980, D.C., S.D.N.Y., Doc. 80–C–6081–CES, *Jerome H. Lemelson* v. *Larami Corporation.*

3,160,987, Wallfill Insulation, Inc., BUILDING CONSTRUCTION AND INSULATION DAM THEREFOR, **filed** Aug. 29, 1980, D.C., C.D. Ill. (Peoria), Doc. 80–1163, *Wallfill Insulation, Inc.* v. *Air Vent, Inc.*

3,170,410. (See 3,144,833.)

3,184,355, Samuel Bingham Company, METHOD OF MAKING A PRINTER'S ROLLER, **filed** Dec. 12, 1977, D.C. Del. (Wilmington), Doc. 77–472, *Samuel Bingham Company* v. *Rodel, Inc.* Stipulation and order dismissing complaint and counterclaims with prejudice with each party to bear its own costs filed Oct. 22, 1980.

3,239,070, Garcy Corp., HANG ROD ASSEMBLY, **filed** Aug. 16, 1978, D.C., N.D. Ill. (Chicago), Doc. 78c3273, *Capitol Hardware Manufacturing Company* v. *Garcy Corp.* Final judgment and decree ordering that complaint and counterclaim are dismissed without prejudice with each party to bear its own costs filed Oct. 23, 1980.

3,264,383, Niessner, Sonnleitner, Wolf and Gutlhuber, EXTRUSION METHODS, **filed** Aug. 30, 1977, U.S. Court of Appeals (1st Cir., Boston), Doc. 77–1394, *Thyseen Plastik Anger KG* v. *Induplas, Inc.* Judgment of district court is reversed and cause is remanded to that court for further proceedings consistent with the opinion filed on May 30, 1978.

3,312,590, Glaxo Group Limited, TOPICALLY ACTIVE ANTI-INFLAMMATORY 17-MONO- AND 17, 21-DIESTERS OF BETAMETHASONE AND ITS 9-CHLORO-ANALOGS, COMPOSITIONS AND USE THEREOF, **filed** June 8, 1979, D.C.N.J. (Newark), Doc. 79–1698, *Glaxo Group Limited* v. *Premo Pharmaceutical Laboratories, Inc.* Action dismissed on Apr.. 3, 1980. **Same, filed** Aug. 28, 1979, D.C.N.J. (Newark), Doc. 79–2607, *Glaxo Group Limited* v. *Lark S.p.A.* Notice of voluntary dismissal filed on Apr. 11, 1980.

Same, filed Apr. 27, 1979, D.C.N.J. (Newark), Doc. 79–C–2208–CLB, *Premo Pharmaceutical Laboratories, Inc.* v. *Schering Corporation.* Stipulation and order of dismissal of action without costs filed Nov. 3, 1980.

3,391,697, Medtronic, Inc., RUNAWAY INHIBITED PACEMAKER; **3,833,005,** same, COMPARED COUNT DIGITALLY CONTROLLED PACEMAKER; **3,901,247,** same, END OF LIFE INCREASED PULSE WIDTH AND RATE CHANGE APPARATUS, **filed** Nov. 7, 1980, D.C. Minn. (St. Paul), Doc. 3–80–617, *Medtronic, Inc. and Med Rel, Inc.* v. *Cardiac Pacemakers, Inc.*

3,394,941, W. S. Shamban & Company, SEALING RING ASSEMBLY, **filed** Oct. 17, 1980, D.C., C.D. Calif. (Los Angeles), Doc. 80–04621, *W. S. Shamban & Company* v. *C. E. Conover & Company, Inc.*

3,396,545, Construction Techniques, Inc., METHOD OF FORMING CONCRETE BODIES, **filed** Nov. 12, 1980, D.C., S.D. Tex. (Houston), Doc. H–80–2560, *Construction Techniques, Inc. et al.* v. *VSL Corporation.*

3,444,986, U.S. Industries, Inc., COMBINATION ANIMAL FEEDER HOPPER AND FEED CONVEYOR CORNER STRUCTURE, **filed** Oct. 17, 1980, D.C., E.D. Tenn. (Chattanooga), Doc. 1–80–351, *Big Dutchman, Division of U.S. Industries, Inc.* v. *Cumberland Corporation.*

3,476,382, AM International, Inc., PHOTOELECTROSTATIC COPYING MACHINE; **3,598,580,** same, PHOTOELECTROSTATIC COPYING PROCESS EMPLOYING ORGANIC PHOTOCONDUCTORS; **3,606,532,** same, PHOTOELECTROSTATIC DUPLICATOR; **3,838,921,** same, PHOTOELECTROSTATIC COPYING APPARATUS, **filed** July 30, 1980, U.S. Court of Claims (Washington, D.C.), Doc. 400–80–C, *AM International, Inc.* v. *The United States.*

3,491,590, Billy K. Watkins, POWER STOPPER WEIGHT TRANSFER APPARATUS, **filed** Aug. 22, 1979, D.C. Ind. (Evansville), Doc. EV–79–141–C, *Billy K. Watkins v. Plainville Lions Club et al.* Defendants are enjoined and restrained from infringing plaintiff's patent. Oct. 10, 1980.

3,496,258, Phillips Petroleum Company, METHOD OF POLYMER MOLDING, **filed** Mar. 9, 1979, D.C., S.D. Ind. (Terre Haute), Doc. TH–79–38–C, *Phillips Petroleum v. Hercules Incorporated.* Consent order of dismissal granted on Mar. 24, 1980.

3,598,580. (See 3,476,382.)

3,606,532. (See 3,476,382.)

3,630,066, Finis L. Chisum, APPARATUS FOR RETURNING VEHICLE BODY AND FRAME COMPONENTS TO THEIR ORIGINAL LOCATIONS DURING REPAIR AND SERVICING OF VEHICLES; **3,888,100,** same, AUTO BODY AND FRAME STRAIGHTENING DEVICES, **filed** Sept. 7, 1978, D.C. Minn. (Minneapolis), Doc. 4–78–C–380, *Finis Lavell Chisum v. John W. Solberg et al.*

3,650,151, Tylan Corporation, FLUID FLOW MEASURING SYSTEM; **3,650,505,** same, THERMAL VALVE; **3,851,526,** same, FLUID FLOWMETER; **3,938,384,** same, MASS FLOW METER WITH REDUCED ATTITUDE SENSITIVITY, **filed** Oct. 22, 1980, D.C. Ariz. (Phoenix), Doc. 80–869–PHX–VAC, *Advanced Semiconductor Materials America, Inc. v. Tylan Corporation.*

3,650,505. (See 3,650,151.)

3,713,659, Forsheda Gummifabrik AB, SEAL FOR RELATIVELY ROTATABLE PARTS, **filed** Nov. 7, 1980, D.C., N.D. Ohio (Cleveland), Doc. C–80–2062, *Forsheda Gummifabrik AB v. EGC Enterprises, Inc. et al.*

3,724,897, Steelcase, Inc., WIRE ROD CHAIR, **filed** Oct. 16, 1978, D.C., E.D. Wis. (Milwaukee), Doc. 78–666, *Steelcase, Inc. v. Krueger, Inc.* Stipulation and order of dismissal filed Sept. 26, 1980.

3,757,825, Scot Tee, PRESSURE EQUALIZING DEVICE FOR FLUID PRESSURE SYSTEMS, **filed** Mar. 30, 1978, D.C., S.D. Calif. (San Diego), Doc. 78–0205–S, *Scot Tee v. Robert Mitton.* Dismissal with prejudice filed Aug. 29, 1980.

3,814,296, Colortronic Reinhard & Co. KG, METERING APPARATUS FOR PLASTIC MATERIALS; **3,985,345,** same, CONTINUOUS COMPOUNDING AND MIXING APPARATUS, **filed** Oct. 22, 1980, U.S. Court of Appeals (1st Cir., Boston), Doc. 80–1698, *Colortronic Reinhard & Co., KG et al. v. Plastic Controls, Inc.*

3,814,296, Colortronic Reinhard & Co. KG, METERING APPARATUS FOR PLASTIC MATERIALS, **filed** Nov. 7, 1980, U.S. Court of Appeals (1st Cir., Boston), Doc. 80–1733, *Colortronic Reinhard & Co., KG v. Plastic Controls, Inc.*

3,830,373, Advanced Drainage Systems, Inc., CORRUGATED DRAINAGE TUBE WITH RESTRAINING SCREEN, **filed** Aug. 23, 1978, D.C., N.D. Ohio (Toledo), Doc. C–78–386, *Advanced Drainage Systems, Inc. v. Hancor, Inc.* Consent decree of dismissal filed Oct. 30, 1980.

3,833,005. (See 3,391,697.)

3,836,821, Minnesota Mining and Manufacturing Company, GROUND FAULT PROTECTIVE SYSTEM, **filed** Sept. 12, 1980, D.C., N.D. Ill. (Chicago), Doc. 80c4908, *Minnesota Mining and Manufacturing Company v. Westinghouse Electric Corporation.*

3,838,921. (See 3,476,382.)

3,851,526. (See 3,650,151.)

3,888,100. (See 3,630,066.)

3,901,247. (See 3,391,697.)

3,914,055, Lansing Research Corporation, INSTRUMENT FOR HIGH RESOLUTION SPECTRAL ANALYSIS WITH LARGE OPTICAL THROUGHPUT, **filed** Nov. 12, 1980, D.C., N.D.N.Y. (Utica), Doc. 80–CV–911, *Lansing Research Corporation v. Sybron Corporation.*

3,938,384. (See 3,650,151.)

3,968,600, National Utility Products Co., ADJUSTABLE MANHOLE COVER SUPPORT STRUCTURE, **filed** Nov. 10, 1980, D.C., N.D. Ohio (Cleveland), Doc. C–80–2972, *National Utility Products Co. v. Pavement Technology, Inc. et al.*

3,979,437, Mobil Oil Corporation, SUBSTITUTED PHENOXY-BENZOIC ACIDS AND DERIVATIVES THEREOF, **filed** Sept. 11, 1978, D.C. Del. (Wilmington), Doc. 78–384, *Rohm and Haas Company v. Mobil Oil Corporation.*

3,985,345. (See 3,814,296.)

3,988,431, Becton, Dickinson & Co., RADIOASSAY OF FOLATES; **4,028,165,** Bio-Rad Laboratories, Inc., ASSAY METHOD FOR SERUM FOLATE, **filed** Mar. 10, 1978, D.C., N.D. Calif. (San Francisco), Doc. C–78–548 CBR, *Bio-Rad Laboratories, Inc. v. Becton, Dickinson & Co.* Order of dismissal stated that all claims are dismissed with prejudice. Oct. 10, 1980.

3,999,756, Prince Manufacturing, Inc., TENNIS RACKET, **filed** July 11, 1980, D.C.S.C. (Greenville), Doc. 80–1338–3, *Prince Manufacturing, Inc. v. A. P. Mixon et al.*

4,012,494, Abbott Laboratories, DIRECT RADIOIMMUNOASSAY FOR ANTIGENS AND THEIR ANTIBODIES, **filed** Mar. 3, 1978, D.C., N.D. Ill. (Chicago), Doc. 78c799, *Abbott Laboratories v. Travenol Laboratories Inc.* Action and defendants counterclaim dismissed with prejudice and without costs on stipulation that all matters have been compromised. Nov. 4, 1980.

4,013,395, Alex F. Wormser, AERODYNAMIC FUEL COMBUSTOR, **filed** Oct. 5, 1977, D.C., W.D.N.Y. (Buffalo), Doc. 77–543, *Wingaersheek, Inc. v. Bernz O Matic Corporation.* **Same, filed** Aug. 2, 1979, D.C., N.D. Ill. (Chicago), Doc. 79c3194, *Wingaersheek, Inc. v. Cleanweld Products, Inc.* **Same, filed** Sept. 24, 1980, D.C., S.D. Fla. (Fort Lauderdale), Doc. 80–6469–C–JAG, *Wingaersheek Division of Victor Equipment Company v. Uniweld Products, Inc.*

4,028,465. (See 3,968,431.)

4,070,022, Precision Shaft Corporation, MATCHED GOLF SHAFTS AND CLUBS, **filed** Oct. 21, 1980, D.C., N.D. Tex. (Fort Worth), Doc. CA4–80–364K, *Precision Shaft Corporation v. Ben Hogan Co.*

4,103,106, Charles J. Sechan, MOBILE RADIOTELEPHONE APPARATUS AND METHOD, **filed** Sept. 18, 1980, D.C., E.D. Pa. (Philadelphia), Doc. 80–3628, *Charles J. Sechan et al. v. Motorola, Inc. et al.*

4,125,902, Michael B. Frank, FITS ALL SIZES WRAP-AROUND GARMENT, **filed** Feb. 27, 1979, D.C., N.D. Tex. (Dallas), Doc. 3–79–0231–R, *Uniforms to You & Co. v. Action Line, Inc.* Motion to stay proceedings granted on the condition that proceedings resume in Re. S.N. 121,748, filed Feb. 15, 1980. Oct. 29, 1980.

4,151,458, Harco Corporation, CLOSELY SPACED PIPE-TO-SOIL ELECTRICAL SURVEY METHOD AND APPARATUS, **filed** Nov. 28, 1979, D.C., N.D. Tex. (Dallas), Doc. CA3–79–1461G, *Harco Corporation v. Frank E. Rizzo et al.* Stipulation of dismissal filed Oct. 3, 1980.

4,213,279, Richard C. Layne, DOCK SEAL FOR BUILDING DOORWAY, **filed** Nov. 10, 1980, D.C., S.D. Ohio (Columbus), Doc. C–2–80–949, *Richard C. Layne v. Rotary Products, Inc.*

4,213,548, Bruce G. Wood, INSULATIVE WIDE STYLE WATCHBAND, **filed** Nov. 14, 1980, D.C., S.D. Calif. (San Diego), Doc. 80–1812–E(I), *Bruce G. Wood v. Ocean Trends et al.*

4,218,107, Anton/Bauer, Inc., BATTERY PACK CONNECTION, **filed** Nov. 3, 1980, D.C.N.J. (Newark), Doc. 80–3557, *Anton-Bauer, Inc. v. Frezzolini Electronics, Inc.*

4,220,263, Albert Caruso, COMBINED HOLDER FOR KEYS AND PROTECTIVE SPRAY, **filed** Nov. 12, 1980, D.C., S.D. Iowa (Des Moines), Doc. 80–466–A, *Strategic Arams Corporation v. Albert Caruso et al.*

4,229,187, Gamewell Manufacturing, Inc., MOVABLE CONTINUOUSLY CHANGING, SELF-CHARGING ELECTROSTATIC FILTER, **filed** Oct. 21, 1980, D.C., W.D.N.C. (Charlotte), Doc. C–C–80–0346, *Gamewell Manufacturing, Inc. v. HVAC Supply, Inc. et al.*

Re. 29,307, Futs Metalliques Gallay, S.A., MANUFACTURE OF METALLIC CONTAINERS, **filed** Oct. 22, 1980, D.C., N.D. Ill. (Chicago), Doc. 80–C–5666, *Futs Metalliques Fallay, S.A. v. Natico, Inc.*

D. 225,954, Michael Schachel, COMBINED CLOTHES RACK AND STORAGE SHELF UNIT, **filed** July 17, 1980, D.C., N.D. Ill. (Chicago), Doc. 80c3737, *Michael Schachel et al. v. Morton Group Ltd.* **Same, filed** Sept. 25, 1980, D.C., S.D. Fla. (Miami), Doc. 80–2669–C–JE, *Michael Schachel et al. v. Closet Concepts, Inc.*

D. 250,203, Vermont Castings, Inc., WOOD BURNING STOVE, **filed** Nov. 13, 1979, D.C. Vt. (Burlington), Doc. 79–265, *Vermont Castings, Inc.* v. *Evans Products Company.* **Same, filed** Oct. 28, 1980, D.C. Vt. (Burlington), Doc. 80–265, *Vermont Castings, Inc.* v. *Franklin Cast Products, Inc.*

D. 251,264, Louis Marx & Co. Inc., TOY VEHICLE, **filed** July 3, 1979, D.C., S.D.N.Y., Doc. 79–C–3477 WCC, *Louis Marx & Co. Inc.* v. *Carolina Enterprises, Inc.* Ordered that action hereby discontinued, without costs to either party. Oct. 31, 1980.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,725,781, Re. S.N. 205,001, Filed Nov. 7, 1980, Cl. 324/83 A, PHASE METER WITH NOISE ERROR REDUCTION MEANS, Philip P. Cox, Owner of Record: *Dranetz Engineering Laboratories, Inc., Plainfield, N.J.,* Attorney or Agent: Robert D. Fier, Ex. Gp.: 252

Public Law 96-517
96th Congress

An Act

To amend the patent and trademark laws.

Dec. 12, 1980
[H.R. 6933]

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That title 35 of the United States Code, entitled "Patents", is amended by adding after chapter 29 the following new chapter 30:

Patent and trademark laws, amendment.

"CHAPTER 30—PRIOR ART CITATIONS TO OFFICE AND REEXAMINATION OF PATENTS

"Sec.
"301. Citation of prior art.
"302. Request for reexamination.
"303. Determination of issue by Commissioner.
"304. Reexamination order by Commissioner.
"305. Conduct of reexamination proceedings.
"306. Appeal.
"307. Certificate of patentability, unpatentability, and claim cancellation.

"§ 301. Citation of prior art

35 USC 301.

"Any person at any time may cite to the Office in writing prior art consisting of patents or printed publications which that person believes to have a bearing on the patentability of any claim of a particular patent. If the person explains in writing the pertinency and manner of applying such prior art to at least one claim of the patent, the citation of such prior art and the explanation thereof will become a part of the official file of the patent. At the written request of the person citing the prior art, his or her identity will be excluded from the patent file and kept confidential.

"§ 302. Request for reexamination

35 USC 302.

"Any person at any time may file a request for reexamination by the Office of any claim of a patent on the basis of any prior art cited under the provisions of section 301 of this title. The request must be in writing and must be accompanied by payment of a reexamination fee established by the Commissioner of Patents pursuant to the provisions of section 41 of this title. The request must set forth the pertinency and manner of applying cited prior art to every claim for which reexamination is requested. Unless the requesting person is the owner of the patent, the Commissioner promptly will send a copy of the request to the owner of record of the patent.

Fee.

Post, p. 3017.

"§ 303. Determination of issue by Commissioner

35 USC 303.

"(a) Within three months following the filing of a request for reexamination under the provisions of section 302 of this title, the Commissioner will determine whether a substantial new question of patentability affecting any claim of the patent concerned is raised by the request, with or without consideration of other patents or printed publications. On his own initiative, and any time, the Commissioner may determine whether a substantial new question of patentability is

raised by patents and publications discovered by him or cited under the provisions of section 301 of this title.

Record. "(b) A record of the Commissioner's determination under subsection (a) of this section will be placed in the official file of the patent, and a copy promptly will be given or mailed to the owner of record of the patent and to the person requesting reexamination, if any.

"(c) A determination by the Commissioner pursuant to subsection (a) of this section that no substantial new question of patentability Refund. has been raised will be final and nonappealable. Upon such a determination, the Commissioner may refund a portion of the reexamination fee required under section 302 of this title.

35 USC 304. **"§ 304. Reexamination order by Commissioner**

"If, in a determination made under the provisions of subsection 303(a) of this title, the Commissioner finds that a substantial new question of patentability affecting any claim of a patent is raised, the determination will include an order for reexamination of the patent Filing period. for resolution of the question. The patent owner will be given a reasonable period, not less than two months from the date a copy of the determination is given or mailed to him, within which he may file a statement on such question, including any amendment to his patent and new claim or claims he may wish to propose, for consideration in the reexamination. If the patent owner files such a statement, he promptly will serve a copy of it on the person who has requested reexamination under the provisions of section 302 of this title. Within a period of two months from the date of service, that person may file and have considered in the reexamination a reply to any statement filed by the patent owner. That person promptly will serve on the patent owner a copy of any reply filed.

35 USC 305. **"§ 305. Conduct of reexamination proceedings**

"After the times for filing the statement and reply provided for by section 304 of this title have expired, reexamination will be conducted according to the procedures established for initial examination under 35 USC 132, 133. the provisions of sections 132 and 133 of this title. In any reexamination proceeding under this chapter, the patent owner will be permitted to propose any amendment to his patent and a new claim or claims thereto, in order to distinguish the invention as claimed from the prior art cited under the provisions of section 301 of this title, or in response to a decision adverse to the patentability of a claim of a patent. No proposed amended or new claim enlarging the scope of a claim of the patent will be permitted in a reexamination proceeding under this chapter. All reexamination proceedings under this section, including any appeal to the Board of Appeals, will be conducted with special dispatch within the Office.

35 USC 306. **"§ 306. Appeal**

"The patent owner involved in a reexamination proceeding under this chapter may appeal under the provisions of section 134 of this 35 USC 134. title, and may seek court review under the provisions of sections 141 35 USC 141-145. to 145 of this title, with respect to any decision adverse to the patentability of any original or proposed amended or new claim of the patent.

35 USC 307. **"§ 307. Certificate of patentability, unpatentability, and claim cancellation**

"(a) In a reexamination proceeding under this chapter, when the time for appeal has expired or any appeal proceeding has terminated,

the Commissioner will issue and publish a certificate canceling any claim of the patent finally determined to be unpatentable, confirming any claim of the patent determined to be patentable, and incorporating in the patent any proposed amended or new claim determined to be patentable.

"(b) Any proposed amended or new claim determined to be patentable and incorporated into a patent following a reexamination proceeding will have the same effect as that specified in section 252 of this title for reissued patents on the right of any person who made, purchased, or used anything patented by such proposed amended or new claim, or who made substantial preparation for the same, prior to issuance of a certificate under the provisions of subsection (a) of this section.". 35 USC 252.

SEC. 2. Section 41 of title 35, United States Code, is amended to read as follows:

"§ 41. Patent fees 35 USC 41.

"(a) The Commissioner of Patents will establish fees for the processing of an application for a patent, from filing through disposition by issuance or abandonment, for maintaining a patent in force, and for providing all other services and materials related to patents. No fee will be established for maintaining a design patent in force.

"(b) By the first day of the first fiscal year beginning on or after one calendar year after enactment of this Act, fees for the actual processing of an application for a patent, other than for a design patent, from filing through disposition by issuance or abandonment, will recover in aggregate 25 per centum of the estimated average cost to the Office of such processing. By the first day of the first fiscal year beginning on or after one calendar year after enactment, fees for the processing of an application for a design patent, from filing through disposition by issuance or abandonment, will recover in aggregate 50 per centum of the estimated average cost to the Office of such processing.

"(c) By the fifteenth fiscal year following the date of enactment of this Act, fees for maintaining patents in force will recover 25 per centum of the estimated cost to the Office, for the year in which such maintenance fees are received, of the actual processing all applications for patents, other than for design patents, from filing through disposition by issuance or abandonment. Fees for maintaining a patent in force will be due three years and six months, seven years and six months, and eleven years and six months after the grant of the patent. Unless payment of the applicable maintenance fee is received in the Patent and Trademark Office on or before the date the fee is due or within a grace period of six months thereafter, the patent will expire as of the end of such grace period. The Commissioner may require the payment of a surcharge as a condition of accepting within such six-month grace period the late payment of an applicable maintenance fee.

"(d) By the first day of the first fiscal year beginning on or after one calendar year after enactment, fees for all other services or materials related to patents will recover the estimated average cost to the Office of performing the service or furnishing the material. The yearly fee for providing a library specified in section 13 of this title with uncertified printed copies of the specifications and drawings for all patents issued in that year will be $50. 35 USC 13.

"(e) The Commissioner may waive the payment of any fee for any service or material related to patents in connection with an occasional or incidental request made by a department or agency of the Waiver.

Government, or any officer thereof. The Commissioner may provide any applicant issued a notice under section 132 of this title with a copy of the specifications and drawings for all patents referred to in that notice without charge.

35 USC 132.

"(f) Fees will be adjusted by the Commissioner to achieve the levels of recovery specified in this section; however, no patent application processing fee or fee for maintaining a patent in force will be adjusted more than once every three years.

Notice.

"(g) No fee established by the Commissioner under this section will take effect prior to sixty days following notice in the Federal Register.".

SEC. 3. Section 42 of title 35, United States Code, is amended to read as follows:

35 USC 42.

"§ 42. Patent and Trademark Office funding

"(a) All fees for services performed by or materials furnished by the Patent and Trademark Office will be payable to the Commissioner.

"(b) All fees paid to the Commissioner and all appropriations for defraying the costs of the activities of the Patent and Trademark Office will be credited to the Patent and Trademark Office Appropriation Account in the Treasury of the United States, the provisions of section 725e of title 31, United States Code, notwithstanding.

"(c) Revenues from fees will be available to the Commissioner of Patents to carry out, to the extent provided for in appropriation Acts, the activities of the Patent and Trademark Office.

Refund.

"(d) The Commissioner may refund any fee paid by mistake or any amount paid in excess of that required.".

SEC. 4. Section 154 of title 35, United States Code, is amended by deleting the word "issue".

SEC. 5. Section 31 of the Trademark Act of 1946, as amended (15 U.S.C. 1113), is amended to read as follows:

"§ 31. Fees

"(a) The Commissioner of Patents will establish fees for the filing and processing of an application for the registration of a trademark or other mark and for all other services performed by and materials furnished by the Patent and Trademark Office related to trademarks and other marks. Fees will be set and adjusted by the Commissioner to recover in aggregate 50 per centum of the estimated average cost to the Office of such processing. Fees for all other services or materials related to trademarks and other marks will recover the estimated average cost to the Office of performing the service or furnishing the material. However, no fee for the filing or processing of an application for the registration of a trademark or other mark or for the renewal or assignment of a trademark or other mark will be adjusted more than once every three years. No fee established under this section will take effect prior to sixty days following notice in the Federal Register.

Notice.

Waiver.

"(b) The Commissioner may waive the payment of any fee for any service or material related to trademarks or other marks in connection with an occasional request made by a department or agency of the Government, or any officer thereof. The Indian Arts and Crafts Board will not be charged any fee to register Government trademarks of genuineness and quality for Indian products or for products of particular Indian tribes and groups.".

Indian products, exception.

SEC. 6. (a) Title 35 of the United States Code, entitled "Patents", is amended by adding after chapter 37 the following new chapter 38:

PUBLIC LAW 96-517—DEC. 12, 1980

"CHAPTER 38—PATENT RIGHTS IN INVENTIONS MADE WITH FEDERAL ASSISTANCE

"Sec.
"200. Policy and objective.
"201. Definitions.
"202. Disposition of rights.
"203. March-in rights.
"204. Preference for United States industry.
"205. Confidentiality.
"206. Uniform clauses and regulations.
"207. Domestic and foreign protection of federally owned inventions.
"208. Regulations governing Federal licensing.
"209. Restrictions on licensing of federally owned inventions.
"210. Precedence of chapter.
"211. Relationship to antitrust laws.

"§ 200. Policy and objective

35 USC 200.

"It is the policy and objective of the Congress to use the patent system to promote the utilization of inventions arising from federally supported research or development; to encourage maximum participation of small business firms in federally supported research and development efforts; to promote collaboration between commercial concerns and nonprofit organizations, including universities; to ensure that inventions made by nonprofit organizations and small business firms are used in a manner to promote free competition and enterprise; to promote the commercialization and public availability of inventions made in the United States by United States industry and labor; to ensure that the Government obtains sufficient rights in federally supported inventions to meet the needs of the Government and protect the public against nonuse or unreasonable use of inventions; and to minimize the costs of administering policies in this area.

"§ 201. Definitions

35 USC 201.

"As used in this chapter—

"(a) The term 'Federal agency' means any executive agency as defined in section 105 of title 5, United States Code, and the military departments as defined by section 102 of title 5, United States Code.

"(b) The term 'funding agreement' means any contract, grant, or cooperative agreement entered into between any Federal agency, other than the Tennessee Valley Authority, and any contractor for the performance of experimental, developmental, or research work funded in whole or in part by the Federal Government. Such term includes any assignment, substitution of parties, or subcontract of any type entered into for the performance of experimental, developmental, or research work under a funding agreement as herein defined.

"(c) The term 'contractor' means any person, small business firm, or nonprofit organization that is a party to a funding agreement.

"(d) The term 'invention' means any invention or discovery which is or may be patentable or otherwise protectable under this title.

"(e) The term 'subject invention' means any invention of the contractor conceived or first actually reduced to practice in the performance of work under a funding agreement.

"(f) The term 'practical application' means to manufacture in the case of a composition or product, to practice in the case of a process or method, or to operate in the case of a machine or system; and, in each case, under such conditions as to establish

that the invention is being utilized and that its benefits are to the extent permitted by law or Government regulations available to the public on reasonable terms.

"(g) The term 'made' when used in relation to any invention means the conception or first actual reduction to practice of such invention.

"(h) The term 'small business firm' means a small business concern as defined at section 2 of Public Law 85-536 (15 U.S.C. 632) and implementing regulations of the Administrator of the Small Business Administration.

"(i) The term 'nonprofit organization' means universities and other institutions of higher education or an organization of the type described in section 501(c)(3) of the Internal Revenue Code of 1954 (26 U.S.C. 501(c)) and exempt from taxation under section 501(a) of the Internal Revenue Code (26 U.S.C. 501(a)) or any nonprofit scientific or educational organization qualified under a State nonprofit organization statute.

35 USC 202.

"§ 202. Disposition of rights

"(a) Each nonprofit organization or small business firm may, within a reasonable time after disclosure as required by paragraph (c)(1) of this section, elect to retain title to any subject invention: *Provided, however,* That a funding agreement may provide otherwise (i) when the funding agreement is for the operation of a Government-owned research or production facility, (ii) in exceptional circumstances when it is determined by the agency that restriction or elimination of the right to retain title to any subject invention will better promote the policy and objectives of this chapter or (iii) when it is determined by a Government authority which is authorized by statute or Executive order to conduct foreign intelligence or counter-intelligence activities that the restriction or elimination of the right to retain title to any subject invention is necessary to protect the security of such activities. The rights of the nonprofit organization or small business firm shall be subject to the provisions of paragraph (c) of this section and the other provisions of this chapter.

Funding agreement.

"(b)(1) Any determination under (ii) of paragraph (a) of this section shall be in writing and accompanied by a written statement of facts justifying the determination. A copy of each such determination and justification shall be sent to the Comptroller General of the United States within thirty days after the award of the applicable funding agreement. In the case of determinations applicable to funding agreements with small business firms copies shall also be sent to the Chief Counsel for Advocacy of the Small Business Administration.

Written determination.

Copy to Comptroller General.

Copy to SBA.

"(2) If the Comptroller General believes that any pattern of determinations by a Federal agency is contrary to the policy and objectives of this chapter or that an agency's policies or practices are otherwise not in conformance with this chapter, the Comptroller General shall so advise the head of the agency. The head of the agency shall advise the Comptroller General in writing within one hundred and twenty days of what action, if any, the agency has taken or plans to take with respect to the matters raised by the Comptroller General.

Contrary agency determinations.

"(3) At least once each year, the Comptroller General shall transmit a report to the Committees on the Judiciary of the Senate and House of Representatives on the manner in which this chapter is being implemented by the agencies and on such other aspects of Government patent policies and practices with respect to federally funded inventions as the Comptroller General believes appropriate.

Report to congressional committees.

"(c) Each funding agreement with a small business firm or nonprofit organization shall contain appropriate provisions to effectuate the following: Funding agreement requirements.

"(1) A requirement that the contractor disclose each subject invention to the Federal agency within a reasonable time after it is made and that the Federal Government may receive title to any subject invention not reported to it within such time.

"(2) A requirement that the contractor make an election to retain title to any subject invention within a reasonable time after disclosure and that the Federal Government may receive title to any subject invention in which the contractor does not elect to retain rights or fails to elect rights within such time.

"(3) A requirement that a contractor electing rights file patent applications within reasonable times and that the Federal Government may receive title to any subject inventions in the United States or other countries in which the contractor has not filed patent applications on the subject invention within such times.

"(4) With respect to any invention in which the contractor elects rights, the Federal agency shall have a nonexclusive, nontransferable, irrevocable, paid-up license to practice or have practiced for or on behalf of the United States any subject invention throughout the world, and may, if provided in the funding agreement, have additional rights to sublicense any foreign government or international organization pursuant to any existing or future treaty or agreement.

"(5) The right of the Federal agency to require periodic reporting on the utilization or efforts at obtaining utilization that are being made by the contractor or his licensees or assignees: *Provided,* That any such information may be treated by the Federal agency as commercial and financial information obtained from a person and privileged and confidential and not subject to disclosure under section 552 of title 5 of the United States Code.

"(6) An obligation on the part of the contractor, in the event a United States patent application is filed by or on its behalf or by any assignee of the contractor, to include within the specification of such application and any patent issuing thereon, a statement specifying that the invention was made with Government support and that the Government has certain rights in the invention.

"(7) In the case of a nonprofit organization, (A) a prohibition upon the assignment of rights to a subject invention in the United States without the approval of the Federal agency, except where such assignment is made to an organization which has as one of its primary functions the management of inventions and which is not, itself, engaged in or does not hold a substantial interest in other organizations engaged in the manufacture or sale of products or the use of processes that might utilize the invention or be in competition with embodiments of the invention (provided that such assignee shall be subject to the same provisions as the contractor); (B) a prohibition against the granting of exclusive licenses under United States Patents or Patent Applications in a subject invention by the contractor to persons other than small business firms for a period in excess of the earlier of five years from first commercial sale or use of the invention or eight years from the date of the exclusive license excepting that time before regulatory agencies necessary to

obtain premarket clearance unless, on a case-by-case basis, the Federal agency approves a longer exclusive license. If exclusive field of use licenses are granted, commercial sale or use in one field of use shall not be deemed commercial sale or use as to other fields of use, and a first commercial sale or use with respect to a product of the invention shall not be deemed to end the exclusive period to different subsequent products covered by the invention; (C) a requirement that the contractor share royalties with the inventor; and (D) a requirement that the balance of any royalties or income earned by the contractor with respect to subject inventions, after payment of expenses (including payments to inventors) incidental to the administration of subject inventions, be utilized for the support of scientific research or education.

"(8) The requirements of sections 203 and 204 of this chapter.

Rights, retention.

"(d) If a contractor does not elect to retain title to a subject invention in cases subject to this section, the Federal agency may consider and after consultation with the contractor grant requests for retention of rights by the inventor subject to the provisions of this Act and regulations promulgated hereunder.

Rights, transfer or assignment.

"(e) In any case when a Federal employee is a coinventor of any invention made under a funding agreement with a nonprofit organization or small business firm, the Federal agency employing such coinventor is authorized to transfer or assign whatever rights it may acquire in the subject invention from its employee to the contractor subject to the conditions set forth in this chapter.

Third-party licensing, prohibition.

"(f)(1) No funding agreement with a small business firm or nonprofit organization shall contain a provision allowing a Federal agency to require the licensing to third parties of inventions owned by the contractor that are not subject inventions unless such provision has been approved by the head of the agency and a written justification has been signed by the head of the agency. Any such provision shall clearly state whether the licensing may be required in connection with the practice of a subject invention, a specifically identified work object, or both. The head of the agency may not delegate the authority to approve provisions or sign justifications required by this paragraph.

"(2) A Federal agency shall not require the licensing of third parties under any such provision unless the head of the agency determines that the use of the invention by others is necessary for the practice of a subject invention or for the use of a work object of the funding agreement and that such action is necessary to achieve the practical application of the subject invention or work object. Any such determination shall be on the record after an opportunity for an agency hearing. Any action commenced for judicial review of such determination shall be brought within sixty days after notification of such determination.

35 USC 203.

"§ 203. March-in rights

"With respect to any subject invention in which a small business firm or nonprofit organization has acquired title under this chapter, the Federal agency under whose funding agreement the subject invention was made shall have the right, in accordance with such procedures as are provided in regulations promulgated hereunder to require the contractor, an assignee or exclusive licensee of a subject invention to grant a nonexclusive, partially exclusive, or exclusive license in any field of use to a responsible applicant or applicants, upon terms that are reasonable under the circumstances, and if the contractor, assignee, or exclusive licensee refuses such request, to

grant such a license itself, if the Federal agency determines that such—

"(a) action is necessary because the contractor or assignee has not taken, or is not expected to take within a reasonable time, effective steps to achieve practical application of the subject invention in such field of use;

"(b) action is necessary to alleviate health or safety needs which are not reasonably satisfied by the contractor, assignee, or their licensees;

"(c) action is necessary to meet requirements for public use specified by Federal regulations and such requirements are not reasonably satisfied by the contractor, assignee, or licensees; or

"(d) action is necessary because the agreement required by section 204 has not been obtained or waived or because a licensee of the exclusive right to use or sell any subject invention in the United States is in breach of its agreement obtained pursuant to section 204.

"§ 204. Preference for United States industry 35 USC 204.

"Notwithstanding any other provision of this chapter, no small business firm or nonprofit organization which receives title to any subject invention and no assignee of any such small business firm or nonprofit organization shall grant to any person the exclusive right to use or sell any subject invention in the United States unless such person agrees that any products embodying the subject invention or produced through the use of the subject invention will be manufactured substantially in the United States. However, in individual cases, the requirement for such an agreement may be waived by the Federal agency under whose funding agreement the invention was made upon a showing by the small business firm, nonprofit organization, or assignee that reasonable but unsuccessful efforts have been made to grant licenses on similar terms to potential licensees that would be likely to manufacture substantially in the United States or that under the circumstances domestic manufacture is not commercially feasible. Waiver.

"§ 205. Confidentiality 35 USC 205.

"Federal agencies are authorized to withhold from disclosure to the public information disclosing any invention in which the Federal Government owns or may own a right, title, or interest (including a nonexclusive license) for a reasonable time in order for a patent application to be filed. Furthermore, Federal agencies shall not be required to release copies of any document which is part of an application for patent filed with the United States Patent and Trademark Office or with any foreign patent office.

"§ 206. Uniform clauses and regulations 35 USC 206.

"The Office of Federal Procurement Policy, after receiving recommendations of the Office of Science and Technology Policy, may issue regulations which may be made applicable to Federal agencies implementing the provisions of sections 202 through 204 of this chapter and the Office of Federal Procurement Policy shall establish standard funding agreement provisions required under this chapter.

"§ 207. Domestic and foreign protection of federally owned inventions 35 USC 207.

"Each Federal agency is authorized to—

"(1) apply for, obtain, and maintain patents or other forms of protection in the United States and in foreign countries on inventions in which the Federal Government owns a right, title, or interest;

"(2) grant nonexclusive, exclusive, or partially exclusive licenses under federally owned patent applications, patents, or other forms of protection obtained, royalty-free or for royalties or other consideration, and on such terms and conditions, including the grant to the licensee of the right of enforcement pursuant to the provisions of chapter 29 of this title as determined appropriate in the public interest;

35 USC 281 *et seq.*

"(3) undertake all other suitable and necessary steps to protect and administer rights to federally owned inventions on behalf of the Federal Government either directly or through contract; and

"(4) transfer custody and administration, in whole or in part, to another Federal agency, of the right, title, or interest in any federally owned invention.

35 USC 208.

"§ 208. Regulations governing Federal licensing

"The Administrator of General Services is authorized to promulgate regulations specifying the terms and conditions upon which any federally owned invention, other than inventions owned by the Tennessee Valley Authority, may be licensed on a nonexclusive, partially exclusive, or exclusive basis.

35 USC 209.

"§ 209. Restrictions on licensing of federally owned inventions

Development or marketing plan.

"(a) No Federal agency shall grant any license under a patent or patent application on a federally owned invention unless the person requesting the license has supplied the agency with a plan for development and/or marketing of the invention, except that any such plan may be treated by the Federal agency as commercial and financial information obtained from a person and privileged and confidential and not subject to disclosure under section 552 of title 5 of the United States Code.

Manufacture in U.S.

"(b) A Federal agency shall normally grant the right to use or sell any federally owned invention in the United States only to a licensee that agrees that any products embodying the invention or produced through the use of the invention will be manufactured substantially in the United States.

"(c)(1) Each Federal agency may grant exclusive or partially exclusive licenses in any invention covered by a federally owned domestic patent or patent application only if, after public notice and opportunity for filing written objections, it is determined that—

"(A) the interests of the Federal Government and the public will best be served by the proposed license, in view of the applicant's intentions, plans, and ability to bring the invention to practical application or otherwise promote the invention's utilization by the public;

"(B) the desired practical application has not been achieved, or is not likely expeditiously to be achieved, under any nonexclusive license which has been granted, or which may be granted, on the invention;

"(C) exclusive or partially exclusive licensing is a reasonable and necessary incentive to call forth the investment of risk capital and expenditures to bring the invention to practical application or otherwise promote the invention's utilization by the public; and

"(D) the proposed terms and scope of exclusivity are not greater than reasonably necessary to provide the incentive for bringing the invention to practical application or otherwise promote the invention's utilization by the public.

Antitrust factors.

"(2) A Federal agency shall not grant such exclusive or partially exclusive license under paragraph (1) of this subsection if it determines that the grant of such license will tend substantially to lessen competition or result in undue concentration in any section of the country in any line of commerce to which the technology to be licensed relates, or to create or maintain other situations inconsistent with the antitrust laws.

Small business preference.

"(3) First preference in the exclusive or partially exclusive licensing of federally owned inventions shall go to small business firms submitting plans that are determined by the agency to be within the capabilities of the firms and equally likely, if executed, to bring the invention to practical application as any plans submitted by applicants that are not small business firms.

Antitrust factors.

"(d) After consideration of whether the interests of the Federal Government or United States industry in foreign commerce will be enhanced, any Federal agency may grant exclusive or partially exclusive licenses in any invention covered by a foreign patent application or patent, after public notice and opportunity for filing written objections, except that a Federal agency shall not grant such exclusive or partially exclusive license if it determines that the grant of such license will tend substantially to lessen competition or result in undue concentration in any section of the United States in any line of commerce to which the technology to be licensed relates, or to create or maintain other situations inconsistent with antitrust laws.

Record.

"(e) The Federal agency shall maintain a record of determinations to grant exclusive or partially exclusive licenses.

Terms and conditions.

"(f) Any grant of a license shall contain such terms and conditions as the Federal agency determines appropriate for the protection of the interests of the Federal Government and the public, including provisions for the following:

"(1) periodic reporting on the utilization or efforts at obtaining utilization that are being made by the licensee with particular reference to the plan submitted: *Provided*, That any such information may be treated by the Federal agency as commercial and financial information obtained from a person and privileged and confidential and not subject to disclosure under section 552 of title 5 of the United States Code;

"(2) the right of the Federal agency to terminate such license in whole or in part if it determines that the licensee is not executing the plan submitted with its request for a license and the licensee cannot otherwise demonstrate to the satisfaction of the Federal agency that it has taken or can be expected to take within a reasonable time, effective steps to achieve practical application of the invention;

"(3) the right of the Federal agency to terminate such license in whole or in part if the licensee is in breach of an agreement obtained pursuant to paragraph (b) of this section; and

"(4) the right of the Federal agency to terminate the license in whole or in part if the agency determines that such action is necessary to meet requirements for public use specified by Federal regulations issued after the date of the license and such requirements are not reasonably satisfied by the licensee.

35 USC 210.

"§ 210. Precedence of chapter

"(a) This chapter shall take precedence over any other Act which would require a disposition of rights in subject inventions of small business firms or nonprofit organizations contractors in a manner that is inconsistent with this chapter, including but not necessarily limited to the following:

"(1) section 10(a) of the Act of June 29, 1935, as added by title I of the Act of August 14, 1946 (7 U.S.C. 427i(a); 60 Stat. 1085);

"(2) section 205(a) of the Act of August 14, 1946 (7 U.S.C. 1624(a); 60 Stat. 1090);

"(3) section 501(c) of the Federal Mine Safety and Health Act of 1977 (30 U.S.C. 951(c); 83 Stat. 742);

91 Stat. 1320.

"(4) section 106(c) of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C 1395(c); 80 Stat. 721);

"(5) section 12 of the National Science Foundation Act of 1950 (42 U.S.C. 1871(a); 82 Stat. 360);

64 Stat. 154.

"(6) section 152 of the Atomic Energy Act of 1954 (42 U.S.C. 2182; 68 Stat. 943);

68 Stat. 944.

"(7) section 305 of the National Aeronautics and Space Act of 1958 (42 U.S.C. 2457);

"(8) section 6 of the Coal Research Development Act of 1960 (30 U.S.C. 666; 74 Stat. 337);

"(9) section 4 of the Helium Act Amendments of 1960 (50 U.S.C. 167b; 74 Stat. 920);

"(10) section 32 of the Arms Control and Disarmament Act of 1961 (22 U.S.C. 2572; 75 Stat. 634);

"(11) subsection (e) of section 302 of the Appalachian Regional Development Act of 1965 (40 U.S.C. App. 302(e); 79 Stat. 5);

"(12) section 9 of the Federal Nonnuclear Energy Research and Development Act of 1974 (42 U.S.C. 5901; 88 Stat. 1878);

88 Stat. 1887.

"(13) section 5(d) of the Consumer Product Safety Act (15 U.S.C. 2054(d); 86 Stat. 1211);

42 USC 5908.

"(14) section 3 of the Act of April 5, 1944 (30 U.S.C. 323; 58 Stat. 191);

"(15) section 8001(c)(3) of the Solid Waste Disposal Act (42 U.S.C. 6981(c); 90 Stat. 2829);

"(16) section 219 of the Foreign Assistance Act of 1961 (22 U.S.C. 2179; 83 Stat. 806);

"(17) section 427(b) of the Federal Mine Health and Safety Act of 1977 (30 U.S.C. 937(b); 86 Stat. 155);

"(18) section 306(d) of the Surface Mining and Reclamation Act of 1977 (30 U.S.C. 1226(d); 91 Stat. 455);

"(19) section 21(d) of the Federal Fire Prevention and Control Act of 1974 (15 U.S.C. 2218(d); 88 Stat. 1548);

"(20) section 6(b) of the Solar Photovoltaic Energy Research Development and Demonstration Act of 1978 (42 U.S.C. 5585(b); 92 Stat. 2516);

"(21) section 12 of the Native Latex Commercialization and Economic Development Act of 1978 (7 U.S.C. 178(j); 92 Stat. 2533); and

7 USC 178j.

"(22) section 408 of the Water Resources and Development Act of 1978 (42 U.S.C. 7879; 92 Stat. 1360).

92 Stat. 1316.

The Act creating this chapter shall be construed to take precedence over any future Act unless that Act specifically cites this Act and provides that it shall take precedence over this Act.

"(b) Nothing in this chapter is intended to alter the effect of the laws cited in paragraph (a) of this section or any other laws with respect to the disposition of rights in inventions made in the perform-

ance of funding agreements with persons other than nonprofit organizations or small business firms.

"(c) Nothing in this chapter is intended to limit the authority of agencies to agree to the disposition of rights in inventions made in the performance of work under funding agreements with persons other than nonprofit organizations or small business firms in accordance with the Statement of Government Patent Policy issued on August 23, 1971 (36 Fed. Reg. 16887), agency regulations, or other applicable regulations or to otherwise limit the authority of agencies to allow such persons to retain ownership of inventions. Any disposition of rights in inventions made in accordance with the Statement or implementing regulations, including any disposition occurring before enactment of this section, are hereby authorized. Rights, disposition.

"(d) Nothing in this chapter shall be construed to require the disclosure of intelligence sources or methods or to otherwise affect the authority granted to the Director of Central Intelligence by statute or Executive order for the protection of intelligence sources or methods. Disclosure.

"§ 211. Relationship to antitrust laws 35 USC 211.

"Nothing in this chapter shall be deemed to convey to any person immunity from civil or criminal liability, or to create any defenses to actions, under any antitrust law.".

(b) The table of chapters for title 35, United States Code, is amended by adding immediately after the item relating to chapter 37 the following:

"38. Patent rights in inventions made with Federal assistance.".

SEC. 7. AMENDMENTS TO OTHER ACTS.—The following Acts are amended as follows:

(a) Section 156 of the Atomic Energy Act of 1954 (42 U.S.C. 2186; 68 Stat. 947) is amended by deleting the words "held by the Commission or".

(b) The National Aeronautics and Space Act of 1958 is amended by repealing paragraph (g) of section 305 (42 U.S.C. 2457(g); 72 Stat. 436).

(c) The Federal Nonnuclear Energy Research and Development Act of 1974 is amended by repealing paragraphs (g), (h), and (i) of section 9 (42 U.S.C. 5908 (g), (h), and (i); 88 Stat. 1889-1891).

SEC. 8. (a) Sections 2, 4, and 5 of this Act will take effect upon enactment. Effective dates. 35 USC 41 note.

(b) Section 1 of this Act will take effect on the first day of the seventh month beginning after its enactment and will apply to patents in force as of that date or issued thereafter.

(c) Section 3 of this Act will take effect on the first day of the first fiscal year beginning on or after one calendar year after enactment. However, until section 3 takes effect, the Commissioner may credit the Patent and Trademark Office appropriation account in the Treasury of the United States with the revenues from collected reexamination fees, which will be available to pay the costs to the Office of reexamination proceedings.

(d) Any fee in effect as of the date of enactment of this Act will remain in effect until a corresponding fee established under section 41 of title 35, United States Code, or section 1113 of title 15, United States Code, takes effect.

(e) Fees for maintaining a patent in force will not be applicable to patents applied for prior to the date of enactment of this Act.

(f) Sections 6 and 7 of this Act will take effect on the first day of the seventh month beginning after its enactment. Implementing regulations may be issued earlier.

(g) Sections 8 and 9 will take effect on the date of enactment of this Act.

Computerized data and retrieval system, report to Congress.
35 USC 14 note.

SEC. 9. The Commissioner of Patents and Trademarks shall report to Congress, within two years after the effective date of this Act, a plan to identify, and if necessary develop or have developed, computerized data and retrieval systems equivalent to the latest state of the art which can be applied to all aspects of the operation of the Patent and Trademark Office, and particularly to the patent search file, the patent classification system, and the trademark search file. The report shall specify the cost of implementing the plan, how rapidly the plan can be implemented by the Patent and Trademark Office, without regard to funding which is or which may be available for this purpose in the future.

SEC. 10. (a) Section 101 of title 17 of the United States Code is amended to add at the end thereof the following new language:

"Computer program."

"A 'computer program' is a set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result.".

(b) Section 117 of title 17 of the United States Code is amended to read as follows:

17 USC 117.

"§ 117. Limitations on exclusive rights: Computer programs

17 USC 106.

"Notwithstanding the provisions of section 106, it is not an infringement for the owner of a copy of a computer program to make or authorize the making of another copy or adaptation of that computer program provided:

"(1) that such a new copy or adaptation is created as an essential step in the utilization of the computer program in conjunction with a machine and that it is used in no other manner, or

"(2) that such new copy or adaptation is for archival purposes only and that all archival copies are destroyed in the event that continued possession of the computer program should cease to be rightful.

"Any exact copies prepared in accordance with the provisions of this section may be leased, sold, or otherwise transferred, along with the copy from which such copies were prepared, only as part of the lease, sale, or other transfer of all rights in the program. Adaptations so prepared may be transferred only with the authorization of the copyright owner."

Approved December 12, 1980.

LEGISLATIVE HISTORY:

HOUSE REPORTS: No. 96-1307, Pt. I (Comm. on the Judiciary) and No. 96-1307, Pt. 2 (Comm. on Government Operations).
CONGRESSIONAL RECORD, Vol. 126 (1980):
Nov. 17, considered and passed House.
Nov. 20, considered and passed Senate, amended.
Nov. 21, House concurred in Senate amendment.

○

PATENT NOTICES

Certificates of Correction for the Week of Feb. 3, 1981

3,843,601	4,200,935	4,219,212	4,224,885
4,035,926	4,202,686	4,219,354	4,224,911
4,045,723	4,205,730	4,219,406	4,225,143
4,068,989	4,207,962	4,219,581	4,225,290
4,080,493	4,208,173	4,219,630	4,225,304
4,095,647	4,208,449	4,219,778	4,225,311
4,117,379	4,208,613	4,219,883	4,225,358
4,119,885	4,209,025	4,219,963	4,225,448
4,140,959	4,209,625	4,220,121	4,225,940
4,142,114	4,209,924	4,220,309	4,226,143
4,153,577	4,210,969	4,220,594	4,226,250
4,154,321	4,211,077	4,220,753	4,226,441
4,154,693	4,211,788	4,220,819	4,226,560
4,154,882	4,212,442	4,221,316	4,226,606
4,158,671	4,212,624	4,221,324	4,226,856
4,162,093	4,212,877	4,221,413	4,226,874
4,162,335	4,213,903	4,221,557	4,226,915
4,169,633	4,214,052	4,221,614	4,226,927
4,169,723	4,214,222	4,221,633	4,227,121
4,179,402	4,215,003	4,221,804	4,227,341
4,182,825	4,215,289	4,221,820	4,227,505
4,182,848	4,215,374	4,221,918	4,227,506
4,187,005	4,216,102	4,222,063	4,227,774
4,187,767	4,216,130	4,222,275	4,228,243
4,187,888	4,216,163	4,222,426	4,228,394
4,188,288	4,216,408	4,222,684	4,228,627
4,191,346	4,216,415	4,222,729	4,228,714
4,192,121	4,216,450	4,222,777	4,228,803
4,193,504	4,216,512	4,222,881	4,228,844
4,193,585	4,216,536	4,223,005	4,228,924
4,193,805	4,216,624	4,223,374	4,228,997
4,194,684	4,217,127	4,223,564	4,229,011
4,195,126	4,217,180	4,223,604	4,229,085
4,195,803	4,217,184	4,223,614	4,229,271
4,196,828	4,217,347	4,223,646	4,229,308
4,197,286	4,217,656	4,223,850	4,229,756
4,197,586	4,217,941	4,223,927	4,229,780
4,198,172	4,218,074	4,224,123	4,230,016
4,199,196	4,218,373	4,224,252	4,230,713
4,199,413	4,219,001	4,224,273	4,230,732
4,200,564	4,219,020	4,224,654	4,231,537
		4,224,735	4,231,700

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for domestic and, possibly, foreign licensing in accordance with the licensing policies of the agency-sponsors.

Copies of patents cited are available from the Commissioner of Patents and Trademarks, Washington, D.C. 20231, for $.50 each. Requests for copies of patents must include the patent number.

Copies of patent applications cited are available from the National Technical Information Service (NTIS), Springfield, Va. 22161, for $5.00 each ($10.00 outside North American Continent). Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to avoid premature disclosure. Claims and other technical data will usually be made available to serious prospective licensees upon execution of a non-disclosure agreement.

Requests for information on the licensing of particular inventions should be directed to the addresses cited for the agency-sponsors.

DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents,
National Technical Information Service,
U.S. Department of Commerce.

U.S. DEPARTMENT OF ENERGY
Assistant General Counsel for Patents
Washington, D.C. 20545

Patent application 6–029,962. Apparatus for Solar Coal Gasification. Filed Apr. 13, 1979.

Patent application 6–042,163. Method for Producing Rapid pH Changes. Filed May 24, 1979.

Patent application 6–061,149. Caliper and Contour Tool. Filed July 26, 1979.

Patent application 6–061,166. Method for Introduction of Gases Into Microspheres. Filed July 26, 1979.

Patent application 6–067,856. Induction Logging Device. Filed Aug. 20, 1979.

Patent application 6–068,358. Method for Cleaning Bomb-Reduced Uranium Derbies. Filed Aug. 21, 1979.

Patent application 6–070,365. Device for Fracturing Silicon-**Carbide Coatings on Nuclear-Fuel Particles. Filed Aug. 28,** 1979.

Patent application 6–071,603. Device and Method for Electron Beam Heating of a High Density Plasma. Filed Aug. 31, 1979.

Patent application 6–098,451. Ionization Chamber. Filed Nov. 29, 1979.

Patent 4,162,230. Method for the Recovery of Actinide Elements From Nuclear Reactor Waste. Filed Dec. 28, 1977. Patented July 24, 1979. Not available NTIS.

Patent 4,162,231. Method for Recovering Palladium and Technetium Values From Nuclear Fuel Reprocessing Waste Solutions. Filed Dec. 28, 1977. Patented July 24, 1979. Not available NTIS.

Patent 4,162,298. Method of Immobilizing Carbon Dioxide **From Gas Streams. Filed Aug. 9, 1978. Patented July 24,** 1979. Not available NTIS.

Patent 4,163,689. Vented Nuclear Fuel Element. Filed Dec. 3, 1965. Patented Aug. 7, 1979. Not available NTIS.

Patent 4,164,479. Method for Calcining Nuclear Waste Solutions Containing Zirconium and Halides. Filed Jan. 12, 1978. Patented Aug. 14, 1979. Not available NTIS.

Patent 4,174,293. Process for Disposal of Aqueous Solutions Containing Radioactive Isotopes. Filed Oct. 12, 1977. Patented Nov. 13, 1979. Not available NTIS.

Patent 4,189,398. Nuclear Fuel Composition. Filed Apr. 15, 1965. Patented Feb. 19, 1980. Not available NTIS.

Patent 4,183,671. Interferometer for the Measurement of Plasma Density. Filed Mar. 14, 1978. Patented Jan. 15, 1980. Not available NTIS.

Patent 4,184,665. Thermally Actuated Wedge Block. Filed Dec. 8, 1978. Patented Jan. 22, 1980. Not available NTIS.

Patent 4,186,657. Apparatus for Shearing Spent Nuclear Fuel Assemblies. Filed Dec. 7, 1978. Patented Feb. 5, 1980. Not available NTIS.

Patent 4,186,118. Manipulator for Rotating and Examining Small Spheres. Filed May 17, 1978. Patented Feb. 12, 1980. Not available NTIS.

Patent 4,189,650. Isolated Trigger Pulse Generator. Filed Oct. 24, 1978. Patented Feb. 19, 1980. Not available NTIS.

Patent 4,189,652. Beam Splitter Coupled CdSe Optical Parametric Oscillator. Filed Aug. 22, 1977. Patented Feb. 19, 1980. Not available NTIS.

Patent 4,189,827. Treatment of Electrochemical Cell Components With Lithium Tetrachloroaluminate ($LiAlCl_4$) to Promote Electrolyte Wetting. Filed Nov. 3, 1978. Patented Feb. 26, 1980. Not available NTIS.

Patent 4,190,016. Cryogenic Target Formation Using Cold Gas Jets. Filed Mar. 13, 1979. Patented Feb. 26, 1980. Not available NTIS.

Patent 4,190,950. Dye-Sensitized Solar Cells. Filed Mar. 24, 1978. Patented Mar. 4, 1980. Not available NTIS.

Patent 4,194,813. Vacuum Aperture Isolator for Retroreflection From Laser-Irradiated Target. Filed Oct. 13, 1978. Patented Mar. 25, 1980. Not available NTIS.

Patent 4,196,183. Process for Purifying Geothermal Steam. Filed Jan. 24, 1979. Patented Apr. 1, 1980. Not available NTIS.

Patent 4,200,815. MHD Generating System. Filed Sept. 19, 1978. Patented Apr. 29, 1980. Not available NTIS.

U.S. DEPARTMENT OF THE INTERIOR
Branch of Patents, 18th and C Sts., N.W.
Washington, D.C. 20590

Patent application 6–108,192. Recovery of Chromium From Scrap. Filed Dec. 27, 1979.

Patent application 6–134,601. Process for Directly Producing Anhydrous Aluminum Sulfate From Aluminum Sulfate Solution. Filed Mar. 27, 1980.

Patent application 6–156,131. Chromium Recovery From Superalloy Scrap by Selective Chlorine Leaching. Filed June 3, 1980.

Patent application 6–164,759. Electrowinning of Lead From H_2SiF_6 Solution. Filed June 30, 1980.

Patent 4,173,140. Trigger Device for Explosion Barrier. Filed Feb. 3, 1978. Patented Nov. 6, 1979. Not available NTIS.

Patent 4,192,737. Froth Flotation of Insoluble Slimes From Sylvinite Ores. Filed Sept. 15, 1978. Patented Mar. 11, 1980. Not available NTIS.

Patent 4,192,738. Process for Scavenging Iron From Tailings Produced by Flotation Beneficiation and for Increasing Iron Ore Recovery. Filed Oct. 23, 1978. Patented Mar. 11, 1980. Not available NTIS.

Patent 4,200,036. Ventilation System for Automated Mining Machines. Filed Nov. 7, 1978. Patented Apr. 29, 1980. Not available NTIS.

Patent 4,203,640. Electrical Cable Coupler With Rotatable Protective Covers. Filed Jan. 24, 1979. Patented May 20, 1980. Not available NTIS.

Patent 4,208,378. Desorption of Gold From Activated Carbon. Filed Apr. 11, 1977. Patented June 17, 1980. Not available NTIS.

Patent 4,208,379. Recovery of Metals From Atlantic Sea Nodules. Filed Apr. 4, 1979. Patented June 17, 1980. Not available NTIS.

Patent 4,209,739. Portable Calibrator for D.C. Circuit Breakers. Filed June 27, 1978. Patented June 24, 1980. Not available NTIS.

Patent 4,209,741. Apparatus for the Continuous Monitoring of Ground Bed Resistance. Filed Mar. 8, 1978. Patented June 24, 1980. Not available NTIS.

U.S. Department of Health and Human Services

National Institutes of Health, Chief, Patent Branch
Westwood Bldg., Bethesda, Md. 20205

Patent 4,154,759. Preparation of N-(Phosphonoacetyl)-L-Aspartic Acid. Filed Aug. 10, 1978. Patented May 15, 1979. Not available NTIS.

Patent 4,178,306. Preparation of N-(Phosphonoacetyl)-L-Aspartic Acid. Filed Aug. 10, 1978. Patented Dec. 11, 1979. Not available NTIS.

Patent 4,179,464. Preparation of N-(Phosphonoacetyl)-L-Aspartic Acid. Filed Aug. 10, 1978. Patented Dec. 18, 1979. Not available NTIS.

Patent 4,215,070. N-(Phosphonoacetyl)-L-Aspartic Acid Compounds and Methods for Their Preparation. Filed Oct. 25, 1978. Patented July 29, 1980. Not available NTIS.

Patent 4,220,552. Method of Producing Delayed Release of Sodium Fluoride. Filed June 5, 1978. Patented Sept. 2, 1980. Not available NTIS.

U.S. Department of the Navy

Director, Navy Patent Program/Patent Council for the Navy
Office of Naval Research, Code 302, Arlington, Va. 22217

Patent application 6–162,702. Slow-Wave Wideband Cyclotron Amplifier. Filed June 24, 1980.

Patent application 6–165,817. Control System for Solar-Assisted Heat Pump System. Filed July 3, 1980.

Patent 4,192,245. Guiding Means for Self-Propelled Torpedoes. Filed May 14, 1958. Patented Mar. 11, 1980. Not available NTIS.

Patent 4,213,073. Rod Pinch Diode. Filed Sept. 20, 1978. Patented July 15, 1980. Not available NTIS.

Patent 4,213,670. Planar Fiber Optic Star and Access Coupler. Filed Oct. 6, 1977. Patented July 22, 1980. Not available NTIS.

National Aeronautics and Space Administration

Assistant General Counsel for Patent Matters—NASA
Code GP–2, Washington, D.C. 20546

Patent application 6–171,927. Superconducting Gyrocon for High Power, High Efficiency Microwave Generator/Amplifier Application. Filed July 18, 1980.

Patent application 6–173,519. Automotive Absorption Air Conditioner Utilizing Solar and Motor Waste Heat. Filed July 30, 1980.

Patent application 6–173,520. Method for Milling and Drilling Glass. Filed July 30, 1980.

Patent application 6–173,521. Castable High Temperature Refractory Materials. Filed July 30, 1980.

Patent application 6–173,524. Low Intensity X-Ray and gamma-Ray Imaging Spectrometer. Filed July 30, 1980.

Patent 4,090,213. Induced Junction Solar Cell and Method of Fabrication. Filed June 15, 1976. Patented May 16, 1978. Not available NTIS.

Patent 4,191,893. Natural Turbulence Electrical Power Generator. Filed Mar. 3, 1978. Patented Mar. 4, 1980. Not available NTIS.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

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Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

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State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
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	Sacramento: California State Library	(916) 322–4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738–5580
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
Delaware	Newark: University of Delaware	(302) 738–2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1458
Minnesota	Minneapolis Public Library & Information Center	(612) 372–6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862–1777
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Public Library of Cincinnati & Hamilton County	(513) 369-6936
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255–7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448–1224**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF NOVEMBER 29, 1980

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy: Metallurgical Apparatus: Metal Stock: Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	11-23-79
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director. Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides: Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	10-10-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthodontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	9-11-79
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director. Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	12-12-79
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	12-5-79
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—Vacant. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	1-8-79
SPECIAL LAWS ADMINISTRATION, GROUP 220—Vacant. Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy; Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	7-2-79
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—Vacant. Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	10-9-79
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ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-21-78
DESIGNS, GROUP 290—Vacant. Industrial Arts; Household, Personal and Fine Arts.	1-8-79
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	8-18-79
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	7-20-79
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	8-1-79
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	6-1-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director. Building Structures; Racks; Cabinets; Closures; Supports: Furniture; Fasteners; Locks; Pipe Couplings; Joints; Misc. Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	3-19-79

Expiration of patents: The patents within the range of numbers indicated below expire during November 1980, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,109,176 to 3,112,486, inclusive
Plant Patents ..... Numbers 2,295 to 2,323, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED FEBRUARY 3, 1981

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T100,301

PHOSPHATE FLOTATION WITH DIBASIC ACIDS

Shuang-shii Hsieh, Florence, Ala., assignor to Tennessee Valley Authority, Washington, D.C.

Filed Nov. 13, 1979, Ser. No. 93,354

Int. Cl.[3] B03D *1/02*

U.S. Cl. 209—166

No Drawing. 9 Pages Specification

A phosphate ore flotation proces subjects a phosphate ore containing silica and silicates to froth flotation in the presence of a collector, said collector being a C_{36} high molecular weight dibasic acid comprising two carboxylic functional groups, recovering the phosphate concentrate from the overflow, and removing the separated silica and silicates in the underflow. The dibasic acids should be used in conjunction with fuel oil, not only to reduce the reagent consumption, but also to increase the grade and recovery of phosphate concentrate.

T100,302

PHOSPHATE FLOTATION WITH TRIBASIC ACIDS

Shuang-shii Hsieh, Florence, and Dennis G. Brooks, Auburn, both of Ala., assignors to Tennessee Valley Authority, Washington, D.C.

Filed Nov. 13, 1979, Ser. No. 93,355

Int. Cl.[3] B03D *1/02*

U.S. Cl. 209—166

No Drawing. 10 Pages Specification

A phosphate ore flotation process subjects a phosphate ore containing silica and silicates to froth flotation in the presence of a collector, said collector being a C_{54} high molecular weight tribasic acid comprising three carboxylic functional groups, recovering the phosphate concentrate from the overflow, and removing the separated silica and silicates in the underflow. The tribasic acids should be used in conjunction with fuel oil, not only to reduce the reagent consumption, but also to increase the grade and recovery of phosphate concentrate.

T100,303

PRODUCTION OF CARBON FIBERS BY THE DIRECT CARBONIZATION OF POLYBENZIMIDAZOLE FIBER

Robert Dix, 5 McKernan Ct., Wayne, Passaic, N.J. 07055

Filed Jan. 4, 1980, Ser. No. 109,582

Int. Cl.[3] D01F *9/12*

U.S. Cl. 423—447.4

No Drawing. 23 Pages Specification

An improved process is provided for readily transforming a relatively low denier (i.e. 0.5 to 10 denier per filament) polybenzimidazole fibrous material to a carbonaceous fibrous material which contains at least 90 percent carbon by weight. The polybenzimidazole fibrous material initially is reacted with a solution of an acid (as described) to form a polybenzimidazonium salt, and the fibrous material subsequently is heated in a non-oxidizing atmosphere to form the carbonaceous fibrous material which retains the original fibrous configuration intact. A preferred acid solution for use in the present process is a dilute solution of sulfuric acid. The resulting carbon fibers are useful as fibrous reinforcement in the resinous or metallic matrix material.

REISSUES

FEBRUARY 3, 1981

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

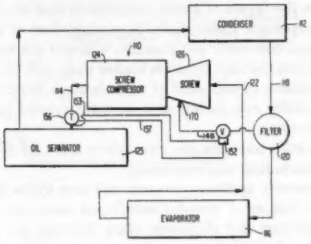
Re. 30,499
INJECTION COOLING OF SCREW COMPRESSORS

Harold W. Moody, Jr., Farmington, and Clark B. Hamilton, Wethersfield, both of Conn., assignors to Dunham-Bush, Inc., West Hartford, Conn.

Original No. 3,795,117, dated Mar. 5, 1974, Ser. No. 285,695, Sep. 1, 1972. Application for reissue Nov. 19, 1974, Ser. No. 525,261

Int. Cl.[3] **F25B** *1/00*

U.S. Cl. 62—117 **25 Claims**



21. In a refrigeration system including a helical rotary screw compressor, a condenser, and an evaporator, in that order, within a closed loop, with refrigerant circulating therebetween, and wherein said screw compressor includes a compressor housing defining with a pair of intermeshed screws rotatably mounted therein, a compressor working chamber and having a capacity control slide valve movable within the rotor housing and away from a fixed valve stop downstream of the compressor intake port for variably opening the compressor working chamber to said intake port, the improvement comprising: means carried by said slide valve for injecting liquid refrigerant bled from the refrigeration system downstream of the condenser into said screw compressor working chamber intermediate of the suction and discharge sides of the same and downstream of said fixed stop, for limiting the discharge temperature of the refrigerant gas.

Re. 30,500
MASSAGE DEVICE

William E. Springer, Bridgeport; John P. Tuohy, Darien, both of Conn., and Henry J. Walter, Dunedin, Fla., assignors to Clairol Incorporated, New York, N.Y.

Original No. 3,994,290, dated Nov. 30, 1976, Ser. No. 617,485, Sep. 29, 1975. Application for reissue Aug. 18, 1978, Ser. No. 934,730

Int. Cl.[3] **A61H** *15/00*

U.S. Cl. 128—57 **17 Claims**

1. A massage device comprising:

a housing disposed about a rotational axis;

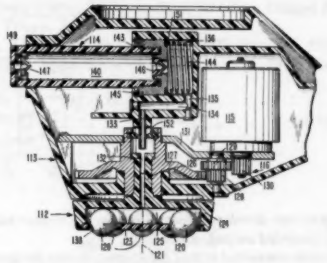
means for transmitting rotary motion to the housing to rotate the housing about the axis;

a circular cavity within the housing for containing a fluid;

a plurality of openings circumferentially disposed in one end of the housing, wherein said openings register with said cavity;

a sphere disposed in each of said openings, wherein the spheres each have a diameter greater than the smallest diameter of the openings, [the] *and* project through the openings for rotation relative to the housing as the housing rotates; and

a passage into said housing communicating with said cavity, wherein said passage is aligned with the axis of said housing and provides for introduction of said fluid into said cavity and onto said spheres for distribution thereby.



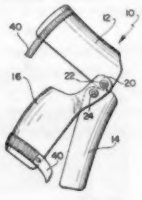
Re. 30,501
UNIVERSAL KNEE ORTHOSIS

Manuel J. Almeida, 20 Ferreira Dr., Tiverton, R.I. 02878

Original No. 4,139,002, dated Feb. 13, 1979, Ser. No. 832,425, Sep. 12, 1977. Application for reissue Oct. 1, 1979, Ser. No. 80,706

Int. Cl.[3] **A61F** *3/00*

U.S. Cl. 128—80 C **14 Claims**



13. An orthosis for the knee or elbow joint of a limb comprising, an upper forward member, a lower forward member and a rear member, means for locating said upper forward member on said limb above said joint, means for locating said lower forward member and said rear member on said limb below said joint, said lower forward member being hingedly connected to said rear member for independent pivotal motion with respect thereto, and said upper and lower forward members being positioned respectively above and below said joint and being formed with cut-out portions to cooperatively form an opening for receiving said joint therein.

Re. 30,502
OPEN LEAD TESTING SYSTEM FOR EEG

Cecil C. Lencioni, Jr., Chicago, Ill., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Original No. 3,859,988, dated Jan. 14, 1975, Ser. No. 355,768, Apr. 30, 1973. Application for reissue Aug. 16, 1976, Ser. No. 709,466

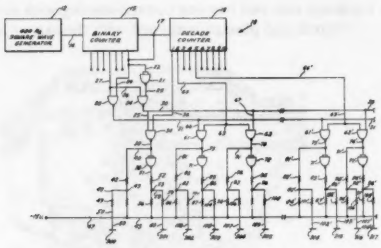
Int. Cl.[3] **A61B** *5/04*

U.S. Cl. 128—2.1 B **8 Claims**

6. A test system for identifying high impedance electrodes of a multi-electrode EEG system during patient testing comprising:

(a) means for generating first test signals of distinctive form whereby said first test signals will not be mistaken for an

EEG signal when they appear in the recorded output, said first test signals being of current amplitude sufficiently small that the voltage developed across a normal electrode having low impedance is below the signal-to-noise ratio of the EEG amplifier but large enough that an electrode presenting a high



impedance develops a voltage producing a clear indication on the recorded output; and,

(b) means connected to said generating means for automatically applying said first test signals to the EEG electrodes in a predetermined test sequence.

Re. 30,503

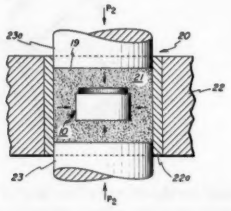
COMPOSITE OF BONDED CUBIC BORON NITRIDE CRYSTALS ON A SILICON CARBIDE SUBSTRATE

Minyoung Lee, Schenectady, and Lawrence E. Szala, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Original No. 4,110,084, dated Aug. 29, 1978, Ser. No. 787,858, Apr. 15, 1977. Application for reissue Apr. 16, 1979, Ser. No. 30,275

Int. Cl.[3] **B24D** *3/06*

U.S. Cl. 51—307 **10 Claims**



1. A process for preparing an abrasive composite consisting essentially of the steps of:

a. placing within a metal container a layer of metal selected from the group consisting of aluminum, aluminum alloy, or alloying metals for providing said aluminum alloy, a layer of a mass of cubic boron nitride crystals, and a silicon carbide substrate, said substrate being disposed with one face or one side facing said layers and in contact with said layer of cubic boron nitride crystals, said aluminum alloy containing aluminum in an amount of at least about 85% by weight of the alloy, said aluminum and aluminum alloy having a critical wetting temperature of less than about 1400° C., being capable of reducing B_2O_3 and exhibiting a limited finite reactivity with cubic boron nitride, the amount of said aluminum or aluminum alloy ranging from about 25% to about 60% by volume of said mass of cubic boron nitride crystals, said substrate consisting essentially of a hot-pressed or sintered polycrystalline silicon carbide body wherein the silicon carbide grains are bonded directly to each other by [fusion] *diffusion* only having a density ranging from about 85% to about 98% of the theoretical density of silicon carbide and containing silicon carbide in an amount of at least 90% by weight of said substrate body and being free of constituents which have a significantly deteriorating effect on any of the materials forming the present abrasive composite;

b. disposing said container and the contents thereof within a pressure-transmitting powder medium that remains at least substantially unsintered under the operating conditions of temperature and pressure and that transmits applied pressure substantially undiminished;

c. applying substantially isostatic pressure to said container and said contents via said pressure transmitting medium, said applied pressure ranging from about 20,000 psi to about 200,000 psi, the application of pressure being maintained at least long enough to substantially stabilize the dimensions of said container and said contents at least in planes through said container parallel to the interface between the layers of metal and cubic boron nitride crystals producing a substantially isostatic system of powder-enveloped container and contents wherein the density of cubic boron nitride crystals is higher than 70% by volume of the volume of said mass of cubic boron nitride crystals,

d. substantially evacuating said isostatic system including said container;

e. introducing a nitrogen gas atmosphere into said evacuated system including said container;

f. simultaneously applying pressure and heat to the resulting isostatic system of powder enveloped container to pass said aluminum and aluminum alloy through the voids in said mass of CBN crystals and into the contacting face or side of said silicon carbide substrate to a depth at least about twice the thickness of said layer of cubic boron nitride crystals, said pressure ranging from about 500 psi to about 100,000 psi and said heating being to a temperature ranging from the critical wetting temperature of said aluminum and aluminum alloy to about 1450° C.;

g. maintaining sufficient pressure on the resulting isostatic system during cooling thereof to maintain the dimensions of said container and

h. recovering the resulting abrasive composite.

Re. 30,504

PHOTOVOLTAIC CELL

John F. Jordan, and Curtis M. Lampkin, both of El Paso, Tex., assignors to Photon Power, Inc., El Paso, Tex.

Original No. 4,159,914, dated Jul. 3, 1979, Ser. No. 892,375, Mar. 31, 1978. Continuation-in-part of Ser. No. 631,815, Nov. 14, 1975, Pat. No. 4,086,101, which is a continuation-in-part of Ser. No. 508,570, Sep. 23, 1974, abandoned, which is a continuation-in-part of Ser. No. 431,705, Jan. 8, 1974, Pat. No. 3,880,633. Application for reissue Aug. 23, 1979, Ser. No. 68,927

The portion of the term of this patent subsequent to Apr. 25, 1995, has been disclaimed.

Int. Cl.[3] **H01L** *31/04*

U.S. Cl. 136—258 **21 Claims**

18. An improved photovoltaic cell having an electrically conductive base, a first layer of polycrystalline semiconductor material, a second layer of material forming a heterojunction with said semiconductor material, and an electrode contacting said second layer, wherein the improvement comprises:

said first layer of semiconductor material having a portion which is resistant to permeation through said first layer to said base by materials forming said heterojunction.

Re. 30,505

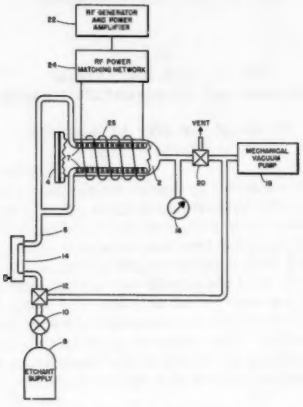
PROCESS AND MATERIAL FOR MANUFACTURING SEMICONDUCTOR DEVICES

Adir Jacob, Framingham, Mass., assignor to LFE Corporation, Waltham, Mass.

Original No. 3,795,557, dated Mar. 5, 1974, Ser. No. 252,863, May 12, 1972. Application for reissue Jun. 12, 1978, Ser. No. 914,540

Int. Cl.[3] **B44C** *1/22;* **C23F** *1/02;* **C03C** *15/00, 25/06*

U.S. Cl. 156—643 **11 Claims**



2. A process for *chemically* etching *solid* material in a plasma environment comprising the step of:

exposing the material to a gaseous plasma formed from a binary mixture consisting essentially of oxygen and a halocarbon having only one carbon atom per molecule, said carbon atom being linked to a predominance of fluorine atoms to produce as an intermediate a low order oxide.

9. A composition of matter, useful in a process for *chemically* etching *a silicon containing* material in the presence of an organic etch mask by forming fluorine-based and oxyfluoride-based compounds volatile in a low pressure-low temperature plasma, consisting essentially of a binary gaseous mixture of oxygen and tetrafluoromethane wherein said mixture contains 1 to 25 percent oxygen by volume.

Re. 30,506

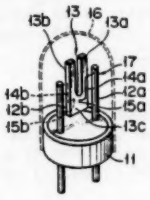
TUNING FORK-TYPE QUARTZ CRYSTAL OSCILLATOR AND METHOD FOR STABILIZING THE VIBRATION FREQUENCY THEREOF

Hozumi Nakata, Iruma, Japan, assignor to Nihon Dempa Kogyo Co., Ltd., Tokyo, Japan

Original No. 4,004,166, dated Jan. 18, 1977, Ser. No. 557,523, Mar. 12, 1975. Application for reissue Aug. 23, 1978, Ser. No. 936,031

Int. Cl.[2] **H01L** *41/08*

U.S. Cl. 310—312 **14 Claims**



5. In a tuning fork-type quartz crystal element comprising a pair of arms having mutually facing ends and respective free ends, each arm having a given size, and a common connecting section connecting the mutually facing ends of the paired arms;

the improvement wherein:

only substantially the whole bottom surface of the common connecting section of said tuning fork-type quartz crystal element is bonded directly to a base member supporting the same by an adhesive agent; and

the lengths of the paired quartz crystal arms being selectively cut down at their free end portions such that the amount of vibration energy leaking from the common connecting section of said quartz crystal element into the base member while the paired quartz crystal arms are mechanically vibrating is minimized.

PLANT PATENTS

GRANTED FEBRUARY 3, 1981

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,636
MINIATURE ROSE PLANT
Leslie E. Strawn, 10422 Morningside Ave., Garden Grove, Calif. 92643
Filed Nov. 15, 1979, Ser. No. 94,817
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—7 **1 Claim**

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, erect, much branched habit, substantially as illustrated and described, characterized by buds and flowers of creamy white with petals bordered in a coral pink, the buds and flowers resembling Magic Carrousel (U.S. Plant Pat. No. 3,601) in color pattern and Sheri Anne (U.S. Plant Pat. No. 3,826) in vigor, form and size, having buds and flowers of a distinctive and unique appearance as compared to other miniature roses, flowers being in a new color combination, being vigorous and compact with abundant foliage, ease of propagation from soft wood cuttings or by budding, and with an abundance of flowers.

4,637
MINIATURE ROSE PLANT
Leslie E. Strawn, 10422 Morningside Ave., Garden Grove, Calif. 92643
Filed Nov. 15, 1979, Ser. No. 94,574
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—9 **1 Claim**

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, rounded, much branched habit, substantially as illustrated and described, characterized by buds and flowers which are in a color hue similar to Pink Cameo (miniature—U.S. Plant Pat. No. 1,451 expired) but giving a color effect of light pink flowers with darker pink centers, and resembling Peaches 'N Cream (miniature—U.S. Plant Pat. No. 4,278) in form and size, having buds and flowers of a distinct and unique appearance as compared to other miniature roses, said flowers being fully double, round in form with high centers; and further characterized by its vigor, abundant foliage and ease of propagation from soft wood cuttings or by budding, and with an abundance of flowers.

4,638
MINIATURE ROSE PLANT
Leslie E. Strawn, 10422 Morningside Ave., Garden Grove, Calif. 92643
Filed Nov. 15, 1979, Ser. No. 94,816
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—9 **1 Claim**

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, erect, much branched habit, substantially as illustrated and described, characterized by buds and flowers which are of a clear, vibrant, deep coral pink, the buds and flowers, in general color effect, similar to Hula Girl (miniature—U.S. Plant Pat. No. 4,091) and Sheri Anne (miniature—U.S. Plant Pat. No. 3,826) in vigor, form and size, the buds and flowers having a distinct and unique appearance as compared to other miniature roses of its color class, said flowers being very double, of symmetrical form; and further characterized by a plant which is vigorous, with compact growth habit, and easy to propagate from soft wood cuttings, or by budding and bearing an abundance of flowers.

4,639
NECTARINE TREE
Frank Paganelli, Rte. #2 Box 2317-A, Wapato, Wash. 98951
Filed Dec. 17, 1979, Ser. No. 14,134
Int. Cl.[3] A01H *5/03*
U.S. Cl. Plt.—41 **1 Claim**

1. A new and distinct variety of nectarine tree similar to its parent Stark "Red Gold" except for the darker redder color of the fruit skin and the slightly earlier maturation of the fruit, together with the tendency for the leaves to be slightly lighter in color than those of the parent and slightly more folded in form as shown and described.

4,640
CHRYSANTHEMUM PLANT
Bob G. Coward, P.O. Box 1608, Ft. Myers, Fla. 33902
Filed Aug. 21, 1979, Ser. No. 68,403
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—82 **1 Claim**

1. A new and distinct cultivar of *Chrysanthemum morifolium,* Ramat., known by the cultivar name Red Belair and particularly characterized as to uniqueness by the combined characteristics of decorative capitulum type; flat capitulum form; dark red-bronze ray floret color; diameter across face of capitulum from 75 to 90 mm. at maturity; uniform nine week response to photoperiodic short-day control; tall plant height; and semi-upright branching pattern.

4,641
POINSETTIA PLANT
Dieter Suptitz, Hamburg, Fed. Rep. of Germany, assignor to Paul Ecke, Jr., Encinitas, Calif.
Filed May 29, 1979, Ser. No. 42,858
Claims priority, application Fed. Rep. of Germany, Jun. 27, 1975, 11/75
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—86 **1 Claim**

1. A new and distinctive variety of red poinsettia substantially as herein shown and described, characterized by the striking red color of its larger than average bracts, its early blooming habit, its medium to short height, its vigorous upright growth habit, and its uniform and fast rooting habit.

PATENTS

GRANTED FEB 3, 1980

ERRATA

For CLASS	See PATENT NO.
273–075	4,247,975
434–153	4,247,994
434–185	4,247,995
411–015	4,248,131
493–004	4,248,139
114–106	4,248,281
411–246	4,248,285
493–416	4,248,414
369–127	4,248,438
292–167	4,248,452
409–307	4,248,559
416–132 B	4,248,568
132–007	4,248,591
204–195 P	4,248,712
204–260	4,248,715
106–046	4,248,727
564–133	4,248,794
564–255	4,248,795
564–285	4,248,796
564–288	4,248,797
564–441	4,248,798
564–491	4,248,799
564–464	4,248,800
564–463	4,248,801
568–477	4,248,802
568–477	4,248,803
568–047	4,248,804
428–159	4,248,973
369–028	4,249,041
455–180	4,249,132
375–002	4,249,180

PATENTS

GRANTED FEBRUARY 3, 1981

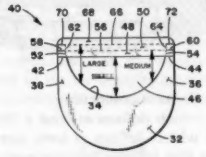
GENERAL AND MECHANICAL

4,247,957

ADJUSTABLE SUN VISOR

Sandra K. Rogers, Berwyn, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Jun. 11, 1979, Ser. No. 47,497
Int. Cl.³ A42B *1/18, 1/22*
U.S. Cl. 2—12 **4 Claims**



1. A unitary adjustable sun visor of semi-rigid material comprising:

a visor portion having an inner arcuate edge defined by rearwardly extending arms and adapted to fit generally over the forehead of the wearer; and

a longitudinally extending, generally rectangular panel having opposed long and short sides, said rectangular panel being integrally formed with said visor portion and connected to the extending arms thereof along one of said long sides of said panel thereby defining a semi-circular head opening with said arcuate edge, said rectangular panel including a pair of spaced perforations starting on said one long side of said rectangular panel and extending to a point intermediate the width of said panel, said perforations being arcuate in configuration, and essentially a continuation of said arcuate edge, whereby when said visor is to be worn, a portion of said rectangular panel is folded along a line parallel to the longitudinal axis of said panel thereby forming a substantially flat headband surface and wherein the size of said head opening may be varied by tearing said perforations and folding said rectangular panel along a line coincident with the end points of the tears of said perforations, such that a larger opening is formed.

4,247,958

UNIFORM CAP WITH CHANGEABLE COVER

Paul G. Gallin, Bronxville, N.Y., assignor to Art Cap Company, Inc., New York, N.Y.

Filed Aug. 1, 1979, Ser. No. 62,768
Int. Cl.³ A42B *1/02;* **A42C** *5/00*
U.S. Cl. 2—187 **6 Claims**

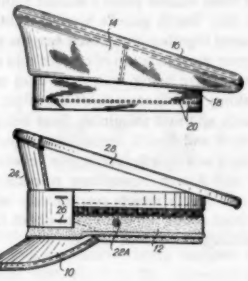
1. A uniform cap of the type having a cap frame including

a head band and a visor and a stay and a grommet for supporting the top of the cap and a separable changeable cap cover covering said stay and said grommet and surrounding and covering the central and upper portions of said head band, wherein said changeable cap cover includes an enlarged upper crown portion having a substantially flat top and a lower band portion surrounding said head band,

said band portion being comprised of elastic and having an unstretched inner circumference smaller than the outer circumference of said head band so as to provide a stretch fit over said head band,

at least two buttons extending radially outwardly on opposite sides of said head band,

said band portion of said cap cover including a large number of holes evenly spaced in a single line around the circumference of said band portion with at least two of said holes being arranged at approximate circumferential positions corresponding to the positions of said buttons and arranged to be threaded over said buttons to hold said cap cover securely upon said head band.

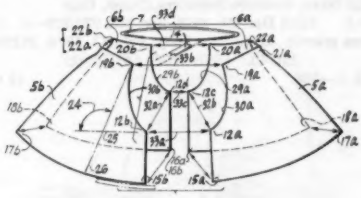


4,247,959

ANTICHAFE LOWER UNDERGARMENT FOR WOMEN

Esther E. Rose, 56 W. 65th St., New York, N.Y. 10018

Filed Apr. 8, 1980, Ser. No. 138,310
Int. Cl.³ A41D *27/26*
U.S. Cl. 2—212 **10 Claims**



1. An antichafe lower undergarment comprising in combination: a composite of first and second pairs of panels of undergarment knit fabric of elongated shape from top to bottom, and said first pair including first and second panels that are mirror-images of each other in shape and being front panels, said second pair including third and fourth panels that are mirror-images of each other and being rear panels, each of said front first panel and said rear third panel having first right and first left upright seam edges, each of said front second panel and rear fourth panel having second right and second left upright seam edges, and said front first panel and said rear third panel each having first and second concavely-shaped arcuate edges extending between an upper portion of said first right upright seam edge and said top of said front first panel and extending between an upper portion of said second right upright seam edge and said top of said rear third panel respectively, and said front second panel and said rear fourth panel having third and fourth concavely-shaped arcuate edges extending between an upper portion of said second left upright seam edge and said top of said front second panel and extending between an upper portion of said fourth left upright seam edge and said top of said rear fourth panel, each of said first, second, third and fourth concavely-shaped arcuate edges being joined together at a lower end of each thereof, and said front first panel's first right edge and said rear third panel's first right edge being seamed together along their lengths as a first seam, and said front second panel's second left edge and said rear fourth panel's second left edge being seamed together along their

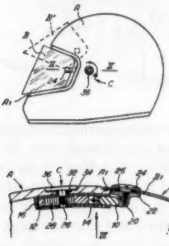
lengths as a second seam, and said first and third concavely-shaped arcuate edges being seamed together along their lengths as a third seam, and said second and fourth concavely-shaped arcuate edges being seamed together along their lengths as a fourth seam, and said front first panel's first left upright seam edge and said rear third panel's first left upright seam edge being seamed together along their lengths as a fifth seam, and said front second panel's second right upright seam edge and said rear fourth panel's second right upright seam edge being seamed together along their lengths as a sixth seam, and from an upper-most location of each of said third seam and said fourth seam, there being imaginary lines each extending downwardly along a surface each of said first, second, third and fourth panels and said imaginary lines being respectively first, second, third and fourth centerlines respectively of said first, second, third and fourth panels, and relative to said first, second, third and fourth centerlines respectively the first, second, third and fourth panels respectively being cut at an angle ranging from about 105 degrees to about 125 degrees off grain of said undergarment knit fabric.

4,247,960

ACTUATING DEVICE FOR THE VIZORS OF HELMETS OR SIMILAR HEADGEARS

Pierluigi Nava, Verderio Superiore, Como, Italy

Filed Dec. 27, 1978, Ser. No. 973,719
Claims priority, application Italy, Feb. 13, 1978, 20250 A/78
Int. Cl.[3] A42B *3/02*; A61F *9/00*
U.S. Cl. 2—424 **19 Claims**



1. A device for changing the relative position of a vizor of a helmet, said helmet having a front-facing oblong opening, the outer perimeter of said opening having a recessed edge for receiving the outside edge of said vizor whereby said helmet and vizor have surfaces which are flush when said vizor is in a first position, comprising:

a slider means connected by hinges to ends of said vizor, said slider means having a slider element which moves in a linear direction with respect to said helmet, said slider element being connected to said vizor for supporting said vizor in a first and a second position;

guide means connected to said helmet for fixing said slider means to said helmet, said guide means permitting said slider element to move in a linear direction for changing said vizor position; and

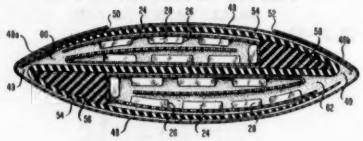
control means for actuating said slider means to produce the linear movement of said slider element whereby the position of said vizor is changed from said first position to said second position away from said helmet.

4,247,961

PILLOW-FIRST AID KIT WITH EJECTOR

Vladimir Masch, 35 Midvale Dr., and Alexander Zamikhovsky, 48 Shelley Dr., both of New Providence, N.J. 07974

Filed Jul. 9, 1979, Ser. No. 55,552
Int. Cl.[3] A47C *27/00*; A47Q *9/00*
U.S. Cl. 5—442 **19 Claims**



1. A pillow combination comprising:

an outer casing which defines at least a first interior compartment and which defines at least one opening therethrough to the first interior compartment;

a shock absorber member being adapted to fit into the first interior compartment and defining a second interior compartment which is adapted to store first aid supplies and equipment, said member also being adapted to provide comfortable padding for a person resting on the pillow, and being further adapted to be relatively easily and quickly removed from the first interior compartment and to be useful as first aid equipment;

access control means is joined to the pillow to control access to the interior compartments through the opening in the casing; and

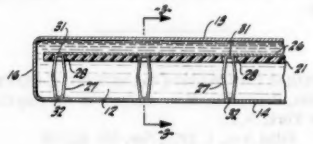
ejector means adapted to fit into the second interior compartment and to cause first aid supplies and equipment which may be stored therein to be at least partially ejected when the access control means allows access to the interior compartments.

4,247,962

WAVELESS WATERBED MATTRESS

Charles P. Hall, Muir Beach, Calif., assignor to Monterey Manufacturing, Inc., Los Angeles, Calif.

Filed Oct. 10, 1978, Ser. No. 949,963
Int. Cl.[2] A47C *27/08*
U.S. Cl. 5—450 **12 Claims**



1. In a waterbed mattress: a top wall, a bottom wall, a pad of buoyant material, and means anchoring the pad to float horizontally between the top and bottom walls, the pad having a horizontal extent corresponding generally to the sleeping surface of the mattress, the pad permitting water to circulate between the volume below and the volume above the pad.

4,247,963

LIQUID SUPPORT CONSTRUCTION

Lakshmi Reddi, 2265 Lichen La., Tustin, Calif. 92680

Filed Apr. 10, 1979, Ser. No. 28,684
Int. Cl.[3] A47C *27/08*
U.S. Cl. 5—450 **16 Claims**

1. A liquid support construction, comprising:

means for defining an enclosed, generally flat, continuous air compartment having an upper outer surface and a lower outer surface;

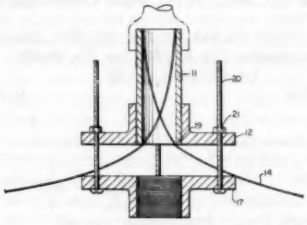
sheet means for defining an enclosed upper and an enclosed lower liquid compartment which respectively bear against the upper and lower surfaces of the air compartment; and means for sealing the liquid compartment to the air compartment along sealing lines extending along a portion of a boundary of at least one of the compartments, whereby the liquid compartment is discontinuous at the sealing lines adjacent to the air compartment while the air compartment is continuous throughout.

4,247,964

CHIMNEY SWEEPING BRUSH

William L. Lichliter, Rte. 5 Box 781, and Dennis N. Compton, 609 Bruce St., both of Winchester, Va. 22601

Division of Ser. No. 950,552, Oct. 12, 1978, Pat. No. 4,200,339.
This application Sep. 25, 1979, Ser. No. 78,707
Int. Cl.³ A46D *3/00*; **A46B** *9/10*; **B08B** *9/02*
U.S. Cl. 15—162 **3 Claims**



1. A chimney cleaning brush comprising a large number of bristles extending outwardly and upwardly from a center hub, said bristles being symmetrically distributed around the periphery of said center hub, said hub comprising a cylindrical retaining means in which the ends of said bristles are secured, said retaining means including spaced apart planar surfaces of two flanges, said bristles being secured in said retaining means by frictional engagement between said flanges, said bristles comprising preformed lengths of wire, each of said lengths of wire being in the shape of a gentle arc.

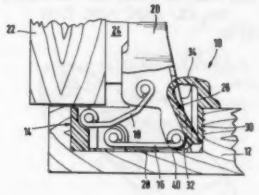
4,247,965

OVER-CENTER HINGE

Karl Lautenschläger, Reinheim, Fed. Rep. of Germany, assignor to Karl Lautenschläger KG, Möbelbeschlagfabrik, Reinheim, Fed. Rep. of Germany

Filed Jun. 22, 1979, Ser. No. 51,033
Claims priority, application Fed. Rep. of Germany, Jun. 26, 1978, 2828052
Int. Cl.³ E05D *11/10*
U.S. Cl. 16—145 **5 Claims**

1. An over-center hinge for a furniture door, having first and second hinge parts, one of the hinge parts having a mortise cup of synthetic material with a bottom and a circumferential wall, a diagonally disposed tongue which is integral with the mortise cup, has a pivot axis, and can be flexed against spring bias, projecting from said wall into the interior of the mortise cup; during a portion of the movement of the hinge, a contact surface provided on the other hinge part as its end facing the pivot axis, sliding on said tongue; said tongue being movable in an intermediate position through a dead point on one sie of which it urges the door to a closed position and on the other side of which it exerts a pressure in the opening direction, said contact surface being so disposed that in the closed position, it lies in the direct vicinity of the pivot axis of the tongue, said tongue having an upper end whih is integrally joined by a resiliently flexible section to the mortise cup, said tongue also having a lower free end which originally extends in an approximately parallel position with respect to the circumferential wall and has two short projections projecting laterally in opposite directions, said projections being snapped into lateral recesses associated with them in the transition area from the bottom to the circumferential wall of the cup such that the tongue is bent from its originally parallel position with respect to the circumferential wall into the diagonal position and placed under bias.

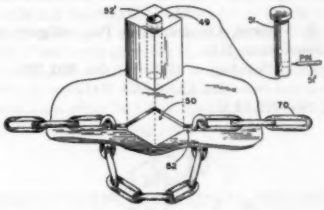


4,247,966

VEHICLE FRAME STRAIGHTENER

Claude Labbe, Box 128, Duson, La. 70529

Continuation of Ser. No. 240,052, Jan. 8, 1976, abandoned. This application Jul. 17, 1978, Ser. No. 925,373
Int. Cl.³ F16G *15/00*
U.S. Cl. 24—116 R **4 Claims**



1. An anchoring system for anchoring the end of a continuous length of chain to a surface on a machine, such as for example a vehicle frame straightener, to anchor the chain length to the machine to prevent any movement of the anchored portion of the chain with respect to the machine, comprising.

a. a four-sided opening in said surface having four, straight sides with opposed connecting corners, said opening having sufficient size to receive into and through it the continuous chain length with a minimum width in its central portion greater than the maximum width of each chain length of the length of chain, and

b. notched means for preventing removal of the continuous chain length from said opening, said notched means comprising two elongated, opposed slots of equal length, each of said slots being openly connected to opposite ones of two of the opposed corners of said four-sided opening and having a length at least as great as the largest width of each link of the length of chain, a central portion of the continuous chain being located down through said opening with space, separated links of the continuous chain length being located in said opposed slots, with the links extending vertically with respect to the surface, and with the central portion of the continuous chain length being

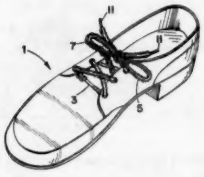
anchored hanging loosely through said opening between the links in said slots.

4,247,967

SLIP-RESISTANT BINDING

Walter C. Swinton, Columbia, S.C., assignor to Excaliber, Incorporated, Atlanta, Ga.

Filed Mar. 16, 1979, Ser. No. 20,976
Int. Cl.[3] A43C *1/00, 7/00*
U.S. Cl. 24—143 R **9 Claims**



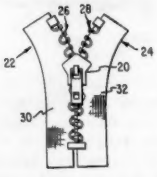
1. A slip resistant binding comprising a strip of material having first and second ends; a multiplicity of male, hook-shaped filamentary members distributed on opposite sides of said strip along a first substantial portion thereof adjacent the first end of said strip and a multiplicity of female, loop-shaped filamentary members distributed on opposite sides of said strip along a second substantial portion thereof adjacent the second end of said strip, said male filamentary members on said first strip portion and said female filamentary members on said second strip portion releasably interengaging each other at crossover points of said first and second strip portions.

4,247,968

FASTENER STRINGER WITH TUBULAR FILAMENT ELEMENT

George B. Moertel, Conneautville, Pa., assignor to Textron, Inc., Providence, R.I.

Filed Aug. 4, 1975, Ser. No. 601,788
Int. Cl.[2] A44B *19/12*
U.S. Cl. 24—205.13 C **14 Claims**



1. A stringer for a slide fastener comprising

a tape-like supporting portion;

a coupling element formed from a continuous tubular deformable filament secured to an edge of the supporting portion;

said coupling element including a plurality of successive deformed convolutions of the continuous tubular deformable filament;

each of said convolutions having a head portion, a pair of leg portions extending from opposite sides of the head portion, and a connecting portion interconnecting leg portions of adjacent convolutions;

said continuous tubular deformable filament having a hollow core substantially throughout its length wherein the ratio of the average filament wall thickness divided by the average inside diameter is in the range of about 0.65 to about 1.8,

at least one of said head portion and said pair of leg portions of each convolution having a cross sectionally deformed portion whereat the wall of the tubular filament is collapsed into the hollow core such as to produce substantially cancelling tension and compression forces longitudinally in the filament to prevent any substantial elongation of the filament,

one of said pair of leg portions of each convolution extending over a side of the tape-like supporting portion and having a notch formed therein facing away from the tape-like supporting portion,

said stringer including a thread extending around the one leg portion of each convolution and laying in the notch of each convolution to secure the coupling element to the tape-like supporting portion, and

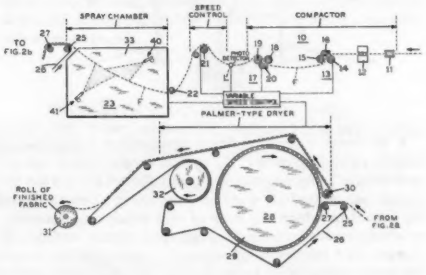
said notch of each convolution being formed by collapse of a portion of the wall of the tubular filament into the hollow core of the filament.

4,247,969

METHOD FOR MOISTURE CONDITIONING OF COMPRESSIVELY TREATED FABRIC

Edmund A. Diggle, Jr., Oradell, and Paul Moser, Harrington Park, both of N.J., assignors to Compax Corporation, Woodside, N.Y.

Continuation of Ser. No. 843,725, Oct. 19, 1977, abandoned.
This application Feb. 8, 1979, Ser. No. 10,495
Int. Cl.[3] D06C *21/00*
U.S. Cl. 26—18.6 **16 Claims**



1. A process for the finish treatment of knitted fabrics containing at least some proportion of hydrophilic fibers, which comprises

(a) mechanically compressively shrinking the fabric longitudinally by an asymmetrical compressive shrinkage process whereby opposite sides of the fabric differ in appearance,

(b) supplying the compressively shrunk fabric to a moisturizing zone and advancing the fabric through said zone,

(c) applying moisture in the form of a finely-divided mist to the fabric from opposite sides thereof, during its passage through said zone, at a rate which will add substantially more moisture by weight to the fabric than the potential moisture regain in time for the fabric and in the range of from more than about 6% up to about 50% moisture by weight, and

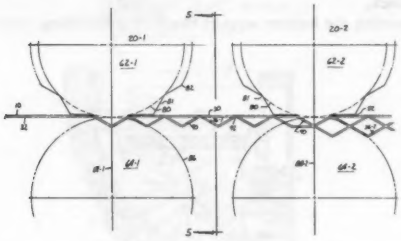
(d) immediately thereafter supporting and confining said fabric in a heating and drying zone, to effect full penetration of the fabric by said applied moisture and to effect drying of the fabric while maintaining the fabric geometrically stabilized whereby significantly improved fabric surface characteristics are achieved through minimization of the two-sidedness in appearance.

4,247,970

APPARATUS FOR FORMING EXPANDED METAL SUCH AS BATTERY GRIDS

William C. Bollinger, Bloomfield Hills, Mich., assignor to Bernal Rotary Systems, Inc., Troy, Mich.

Filed Apr. 11, 1979, Ser. No. 29,253
Int. Cl.[3] B23D *31/02;* B23P *15/00*
U.S. Cl. 29—2 17 Claims



1. Apparatus for forming at least a portion of a strip of metal having parallel opposite faces and longitudinal edges into expanded segments of a reticulation extending inwardly from one of the edges of the strip comprising:

a frame;

feed means carried by the frame for continuously moving the strip lengthwide along a path of travel;

a series of pairs of rollers, each pair comprising a shearing roller and a supporting roller, and means carried by the frame for mounting the pairs of rollers at spaced intervals along the path of travel for rotation on parallel axes extending transversely to the path of travel, the axes of all shearing rollers being located in parallel spaced relation to one face of the strip and the axes of all supporting rollers being located in parallel spaced relation to the opposite face of the strip with the axis of each supporting roller of a pair of rollers aligned with the axis of the shearing roller of that pair;

each shearing roller having a base diameter and a periphery formed by a plurality of circumferentially spaced lobes projecting outwardly from the base diameter and provided with shearing faces lying in a common plane perpendicular to the axis of the shearing roller, each lobe having a circumferential length corresponding to the length of a segment of the reticulation and a radial depth corresponding to one-half of the width of said segment;

each supporting roller having a cylindrical periphery with a diameter corresponding to the base diameter of the shearing roller and an axially perpendicular end face;

each successive pair of shearing and supporting rollers being progressively offset with respect to one edge of the strip so that the lobes of the shearing roller overlap one face of the strip along one edge thereof by an amount corresponding to the width of the expanded metal, the periphery of the supporting roller engages the opposite face of the strip, and the end face of the supporting roller is overlapped by and is in shearing relationship with the shearing faces of the lobes of the shearing roller;

means for driving the shearing and supporting rollers in unison;

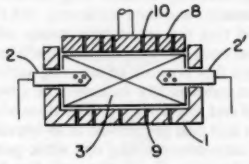
rotary die means mounted at the entrance end of the path of travel and driven in unison with the shearing and supporting rollers for forming longitudinally spaced indexing apertures in the strip, and wherein said feeding means comprises a plurality of feeding rollers carried by the frame and driven in unison with the shearing and supporting rollers, each feeding roller having projecting means engageable with said indexing apertures.

4,247,971

PROCESS FOR STICKING CHEMICAL TO FIBROUS ARTICLE

Yoshio Maruta, Musashino, and Minoru Hosoya, Tokyo, both of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Jul. 16, 1979, Ser. No. 58,121
Claims priority, application Japan, Jul. 14, 1978, 53/86375
Int. Cl.[3] B23P *17/06;* B08B *1/00*
U.S. Cl. 29—4.5 B 3 Claims



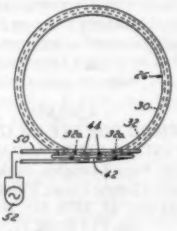
1. A process for impregnating steel wool with soap and forming the steel wool into a scouring pad, which comprises the steps of: placing a quantity of steel wool into the cavity of a mold, said mold having a vapor-pervious bottom wall, a vapor-pervious top wall and side walls, said top wall and said bottom wall being spaced apart so that said cavity is enlarged; extending injecting nozzle means into the central internal zone of said quantity of steel wool in said mold cavity and injecting through said nozzle means, into said quantity of steel wool, a stream of liquid aqueous soap composition containing from 50 to 70% by weight of soap, said composition being at a temperature of from 110° to 200° C. and under a pressure of from 1.5 to 20 Kg/cm^2 effective to prevent vaporization of the water contained in said composition until said composition enters said quantity of steel wool from said nozzle means so that when said liquid aqueous soap composition enters said quantity of steel wool, the water therein flash evaporates into steam and the steam flows to and through said vapor-pervious bottom and top walls and thereby the soap is carried by the steam and is deposited on the steel wool to form a substantially uniform distribution of said soap adhering to said quantity of steel wool; then removing said nozzle means from said quantity of steel wool; and then relatively moving said top wall and said bottom wall toward each other to compression mold said quantity of steel wool to form a scouring pad.

4,247,972

METHOD OF MANUFACTURING A PISTON RING

John L. Hendrixon, Shelby, and Robert R. Rositch, Spring Lake, both of Mich., assignors to Sealed Power Corporation, Muskegon, Mich.

Division of Ser. No. 872,157, Jan. 25, 1978, Pat. No. 4,161,321.
This application Jan. 26, 1979, Ser. No. 6,847
Int. Cl.[3] B23P *15/06*
U.S. Cl. 29—156.63 9 Claims



1. In a method of manufacturing a piston oil ring assembly for a reciprocating piston engine which comprises a parted annular sealing ring adapted to be disposed in a piston ring groove and a separate expander-spring disposed in said groove

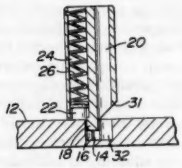
to engage a radially inwardly directed ring surface of substantially constant diameter for expanding said ring into sealing engagement with a cylinder wall, a method of impeding potential wear between said expander-spring and first portions of said ring surface adjacent the ring tips during operation against a cylinder wall and embedment of said expander-spring into said ring surface, said method comprising the steps of forming said ring as a one-piece parted annular integral member of generally uniform material composition and hardness with a said radially inwardly directed ring surface of substantially constant diameter, and then hardening said ring surface only adjacent said ring tips while maintaining said generally uniform material composition and substantially constant diameter such that said first portions of said ring surface adjacent said ring tips are substantially hardened as compared with the remainder of said ring surface and portions of said ring extending between said first portions so as to impede said wear and embedment adjacent said ring tips while permitting resilient flexure in said portion of said ring extending between said first portions to follow surface variations in a cylinder wall in sealing engagement therewith.

4,247,973

METHOD AND APPARATUS FOR REPAIRING CRACKED METAL PARTS

David Diperstein, Glenside, Pa., assignor to Seal Lock International, Inc., Philadelphia, Pa.

Filed Jun. 25, 1979, Ser. No. 51,929
Int. Cl.[3] B23P 7/04
U.S. Cl. 29—402.11 **5 Claims**



1. A method of joining metal on opposite sides of a gap, crack or the like, comprising:

(a) drilling a first hole in the gap with a drill bit of a size so that a portion of the first hole is in the metal on opposite sides of the crack,

(b) inserting a first projection on a tool in said first hole, using a tool having a bore contiguous with said projection, orientating the tool so that said bore overlies the desired position for a second hole,

(c) inserting said drill bit through said bore and drilling a second hole contiguous with said first hole,

(d) moving the fixture 180°, moving a second projection on said tool into said second hole, then using said drill bit to drill a third hole which is contiguous with said first hole so that all of said holes are in a row transverse to the crack and with uniform overlap between adjacent holes,

(e) inserting and securing a fastener in said holes.

4,247,974

SET-UP METHOD FOR STEAM GENERATOR TUBE INSTALLATION APPARATUS

Leonard R. Golick, Penn Township, Burks County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 18, 1978, Ser. No. 952,433
Int. Cl.[2] B23K 31/00
U.S. Cl. 29—407 **8 Claims**

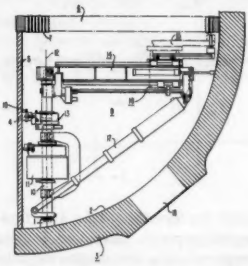
1. A method of installing a bottom support block and a side anchor block for an apparatus support column to be located at the interior of the channel head at a particular tube sheet bottom site adjacent to the divider plate and in extension perpendicularly to the tube sheet bottom in a steam generator, comprising the steps of

measuring the tilt of the aforesaid tube sheet bottom,

establishing a channel head wall site on the interior bottom wall of the channel head directly beneath the aforesaid tube sheet bottom site,

erecting an elongated alignment member vertically between the aforesaid tube sheet bottom site and the channel head wall site and in support by the aforesaid bottom support block,

relocating the bottom support block by establishing correspondence between information from a tilt sensor means on the alignment member and that relating to the tube sheet bottom,



welding said bottom support block in place at its relocated site,

introducing the side anchor block to the divider plate at one side of said alignment member at a particular vertical location thereon and rotary alignment thereof,

welding said anchor block in place on the divider plate,

measuring the gap between said secured anchor block and a fixture on said alignment member, and

removal of such alignment member.

4,247,975

STRING ATTACHING TO GAME RACKET HANDLE

Mark L. Robinson, Andover, Mass., assignor to Acro, Inc., Stoneham, Mass.

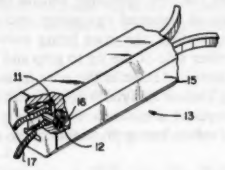
Division of Ser. No. 878,087, Feb. 15, 1978, Pat. No. 4,161,813, which is a continuation-in-part of Ser. No. 800,660, May 26, 1977, abandoned. This application Apr. 2, 1979, Ser. No. 26,046
Int. Cl.[3] A63B 49/08
U.S. Cl. 273—75 **7 Claims**

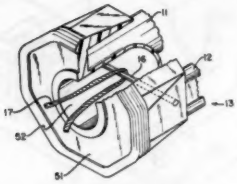
1. In a game racket having a frame with a handle portion comprising opposed legs, the improvement comprising,

pin means connected between said opposed legs in said handle portion near the end thereof for accommodating a handle string looped thereover,

said handle portion comprising additional material between

and around said opposed legs and formed with a cavity extending from the end of said handle portion to slightly





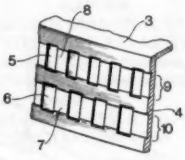
beyond said pin means for accommodating said handle string.

4,247,976

METHOD FOR PRODUCTION OF A TURNTABLE WITH STROBOSCOPE MARKS

Rudolf Reuter, St. Georgen, Fed. Rep. of Germany, assignor to Dual Gebrüder Steidinger, St. Georgen, Fed. Rep. of Germany

Filed Dec. 22, 1978, Ser. No. 972,365
Int. Cl.³ B22D *11/126*; G11B *1/00*
U.S. Cl. 29—527.4 **2 Claims**



1. A method for the production of a disc with stroboscope marks comprising the steps in sequence of

stamping recesses in the vicinity of the edge of a deformable planar metal disc, said recesses defining therebetween intermediate areas for stroboscope marks,

bending said edge downwardly to form a rim and coloring said disc dark,

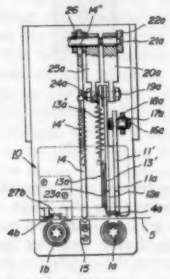
lightly cutting said areas to a depth less than that of said recesses and in a width of said stroboscope marks which width is slightly smaller than that of said recesses, the latter corresponding to intermediate spaces of said stroboscope marks, whereby a contrast in lightness is achieved between the lightly cut stroboscope marks and the deeper recesses.

4,247,977

AUTOMATIC TAPE ENGAGING AND SECURING DEVICE

Taiji Nakamura, No. 107, Kamikurata-Cho, Totsuka-ku, Yokohama City, Kanagawa Prefecture, Japan

Filed Dec. 28, 1978, Ser. No. 973,795
Claims priority, application Japan, Dec. 30, 1977, 52-185053
Int. Cl.³ B23P *19/00*
U.S. Cl. 29—566.1 **4 Claims**



1. An automatic tape engaging and securing device comprising a support for mounting a reel having a recessed portion in the circumferential periphery thereof with said recessed portion being enlarged in the interior thereof as compared to the opening into said recessed portion, an engaging and securing element supply mechanism including an engaging and securing element having the shape of a groove with outwardly projecting ends, said engaging and securing element being positioned opposite and adjacent to the recessed portion of the reel mounted on said support, a longitudinally extending first pushing bar having one end adjacent to said support and to said engaging and securing element and said one end having an inclined surface for pushing one outwardly projecting end of said engaging element and for inserting said one end into said recessed portion, a longitudinally extending second pushing bar having one end adjacent to said support and to said engaging and securing element and located on the opposite side of said engaging and securing element from said one end of said first pushing bar, and said one end of said second pushing bar having an inclined surface inclined in the opposite direction to the inclined surface of said one end of said first pushing bar for pushing the other outwardly projecting end of said engaging element and for inserting it into said recessed portion, and a cutter bar positioned alongside one of said first and second pushing bars and arranged to cut a tape engaged within said recessed portion by said engaging and securing element.

4,247,978

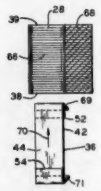
METHODS OF MAKING SLOT LINERS AND STATOR ASSEMBLIES INCLUDING SAME

Chester A. Smith, Ottawa County, Mich., assignor to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 795,738, May 11, 1977, Pat. No. 4,151,436.
This application Jan. 4, 1979, Ser. No. 922
Int. Cl.³ H02K *15/10*
U.S. Cl. 29—596 **3 Claims**

1. A method of making a stator assembly including insulating a magnetic stator core having axially extending slots therein with slot liners formed from insulating material and having opposite end portions thereof folded in opposite directions relative to each other and relative to a longitudinally extending central portion thereof so that the slot liners have folded leading and trailing end portions of double thickness material having the raw ends thereof disposed on opposite sides of the piece of insulating material; the method comprising: advancing the folded leading end of each slot liner axially along an axially

extending slot of the stator core with the raw end thereof being advanced first and being disposed adjacent a wall of a slot; advancing each such slot liner along the axially extending slot until the slot liner, including its folded trailing end portion is disposed within the slot, with the raw end of the folded trailing end portion being separated from the slot wall by at least the central portion of the slot liner; advancing conductor portions of coils axially in the slots with slot liners positioned therein in



a direction relative to the core generally the same as that employed for advancing the slot liners relative to the core, with the conductor portions being first moved over the folded trailing end portion of each such slot liner and the raw end thereof; and advancing the conductor portions axially along the slot until they are disposed within the slot and separated from the raw end of the leading end portion of each such slot liner by at least the central portion of each such slot liner.

4,247,979

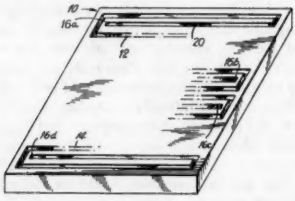
RADIANT HEATER AND METHOD OF MAKING SAME

Richard H. Eck, 352 Pines Lake Dr. East, Wayne, N.J. 07470

Filed Mar. 8, 1979, Ser. No. 18,843

Int. Cl.³ H05B *3/26*

U.S. Cl. 29—611 **9 Claims**



1. A method of making a radiant heater panel comprising the steps of forming a groove in one surface of an insulating board, placing a heating coil in said groove, attaching a front radiating material to the grooved surface of said insulating board with a layer of cement, placing the board/material assembly in an upside-down position with the front radiating material being lowermost, and allowing the layer of cement to dry in such position.

4,247,980

WIRE FEED AND CONTACT INSERTION APPARATUS

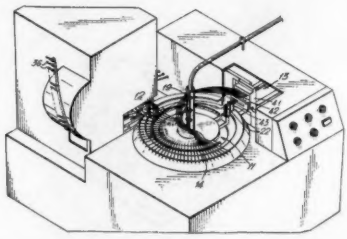
Kunitada Tominoi, Kawasaki, Japan, assignor to AMP Incorporated, Harrisburg, Pa.

Division of Ser. No. 871,666, Jan. 23, 1978, Pat. No. 4,171,566. This application May 14, 1979, Ser. No. 39,057

Int. Cl.³ H01R *43/04*

U.S. Cl. 29—742 **1 Claim**

1. Apparatus for terminating wires with electrical contacts at a first operating station, transfering terminated wires successively to a second operating station spaced from the first operating station and inserting the contacts terminating the wires into respective through cavities of a connector housing, the apparatus comprising a wire locating jig comprising an annulus or disc having a series of circumferentially closely spaced slots on one side for locating individual wires, the jig being mounted for stepped rotation past a terminator for applying contacts to the wires at a first operating station, a wire transfer mechanism comprising a plurality of widely circumferentially spaced wire gripping jaws mounted for stepped rotation in the same direction as the jig past the first operating station and past contact insertion apparatus at a second operating station spaced from the first operating station, the jaws being movable axially of the jig from the other side of the jig to grip and remove a wire from one of said slots and transfer the wire from the first to the second operating station in synchronism with the jig movement, means to support a multi-cavity housing at the second operating station, means being provided at the second operat-



ing station to locate the contact generally in alignment with a housing cavity and adjacent a rear face of the housing so supported, a reciprocating contact guide of complementary shape to the contact mounted in alignment with the cavity adjacent a front face of the housing, and means to insert the contact guide through the cavity from the front face into mating engagement with the contact and to insert the contact guided by the contact from the rear face into the cavity and to withdraw the contact guide from the cavity and housing indexing means to bring individual through cavities successively into alignment with individual contacts transferred successively to the contact locating means.

4,247,981

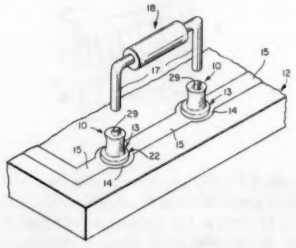
METHODS OF ASSEMBLING INTERCONNECT MEMBERS WITH PRINTED CIRCUIT BOARDS

Jay A. Walters, Shreveport, La., assignor to Western Electric Company, Inc., New York, N.Y.

Division of Ser. No. 917,773, Jun. 21, 1978, Pat. No. 4,181,387. This application Jun. 18, 1979, Ser. No. 49,265

Int. Cl.³ H05K *3/30*

U.S. Cl. 29—845 **9 Claims**



1. A method of assembling an interconnect socket with a printed-circuit board having a mounting hole in a first surface of the board, which comprises:

(a) depositing a conductive pattern on the first surface, about the hole, in the form of a deformable, heat curable conductive layer;

(b) inserting a solid metallic socket into the hole so that a first portion of the socket mechanically engages portions of the walls of the hole to fasten the socket to the board,

and so that solid metallic contact portions of the socket compress portions of the deformable conductive layer to make electrical contact therewith; and then

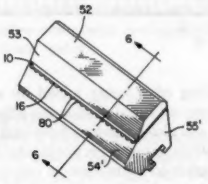
(c) curing the conductive layer while the socket is so fastened in place, to make permanent contact between the conductive pattern and the contact portions of the socket.

4,247,982

SKIN-FLOW CONTROL RAZOR

Anthony R. Booth, Orange, and Cyril A. Cartwright, Monroe, both of Conn., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Apr. 2, 1979, Ser. No. 26,160
Int. Cl.³ B26B *21/06, 21/40*
U.S. Cl. 30—41 **12 Claims**



1. A shaving assembly comprising:

a blade supporting member having a support platform thereon;

a razor blade positioned on said support platform, said blade having a cutting edge along the forward margin thereof;

means retaining said blade in position on said support platform; and

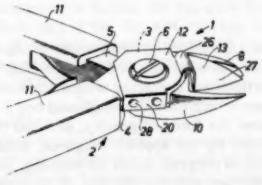
an elongated guard element positioned in advance of and extending longitudinally substantially parallel to said blade cutting edge, said guard element having a substantially planar skin-engaging control surface and a plurality of small holes extending therethrough and arrayed along the length of said skin-engaging control surface closely adjacent said blade cutting edge for allowing flow of cleansing liquid therethrough, said skin-engaging control surface being of sufficient area along its length and positioned sufficiently close to said blade cutting edge that any skin entering any unsupported area therebetween is substantially insufficient to allow nicking of the skin.

4,247,983

WIRE RETAINER AND DIAGONAL CUTTING NIPPER WITH WIRE RETAINER

Conny Jansson, Enköping; Lars Erlandsson, and Rolf Appelkvist, both of Eskilstuna, all of Sweden, assignors to AB Bahco Verktyg, Enköping, Sweden

Filed Aug. 24, 1979, Ser. No. 69,366
Int. Cl.³ B26B *17/04*
U.S. Cl. 30—124 **8 Claims**



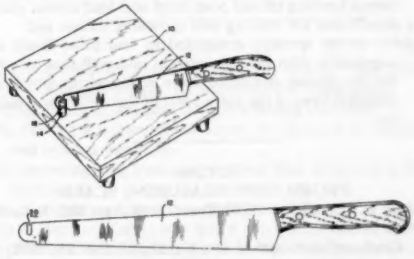
5. A diagonal cutting nipper with a first and a second member crossing each other at a joint portion, which are pivotably kept together by a hinge means in the joint portion and forwards thereof form the jaws provided with cutting edges of the nipper, and rearwards thereof form both arms of the nipper, the edges being situated at the intersection between a substantially flat defining surface on the underside of the jaws and a defining surface on the upper side of the jaws in a depression which is formed by bevels in both jaws, a wire retainer made from sheet metal being attached to the first member of the nipper at the joint portion and adapted for preventing offcuts from dropping when cutting wire with the nipper, the retainer comprising an attachment portion and integral therewith a wire retainer tongue projecting forwards from the attachment portion along the jaw of the first member and extending laterally past the edge of this jaw towards the adjacent second jaw so that with closed jaws it resiliently and yieldingly engages with its wire retaining edge against and along the edge of the second jaw, the attachment portion comprising a plate with front edge, rear edge and side faces formed from bent-up flanges, said plate engaging against the first nipper member at the joint portion, its flanges gripping round the first member in the joint portion, extending along side edges thereof, with the first of the flanges being so formed at the front edge of the plate with a flap bent inwardly at substantially 180° so that it forms a hook, the outer end of which engages against the side of the first member facing inwards towards the second member in a region at the joint portion on the first member outside, but closely adjacent the second member, while the opposite, second flange is bent inwards substantially at right angles to the plate of the wire retainer, whereby the retainer is removably snapable onto the nipper, the tongue comprising a flap projecting from the front edge of the plate and having a rear portion joining onto the front edge of the plate and from there being bent outwards from the plate and bent in a curve forwards-backwards to merge into a forward portion extending forwards from the rear portion in the form of a blade, which is oblique in relation to the plate, closely adheres to the form of said bevel in the jaw of the first member and is provided with said wire retaining edge.

4,247,984

KNIFE AND CHOPPER BOARD COMBINATION

Christopher J. McArdle, Alta Loma, and Omer T. Simeon, Playa del Rey, both of Calif., assignors to Prodyne Enterprises, Inc., Montclair, Calif.

Filed Jan. 21, 1980, Ser. No. 113,596
Int. Cl.³ B26B *27/00*
U.S. Cl. 30—296 R **3 Claims**



1. In combination: a board; a stud mounted on the board and extending upwardly from the top surface thereof, said stud having a vertical slot formed in the upper end thereof to constitute a yoke, a pin mounted in the upper end of the stud and extending transversely across the vertical slot, and a knife having an elongated blade with the forward end thereof shaped to permit the knife to be turned about the axis of the pin with the edge of the forward end engaging the inner end of the slot, and said forward end of the blade having a slot therein extending from the central longitudinal axis of the blade to the

edge thereof opposite to the cutting edge at a predetermined angle to the longitudinal axis of the blade, said last-named slot extending radially from the axis of the pin when the knife is in position to permit the knife to be pivotally mounted on the pin and to be removed when the knife is turned through a vertical arc to a particular angular position about the axis of the pin.

4,247,985

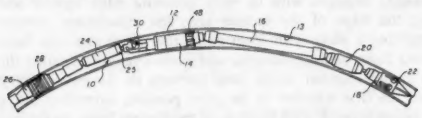
TFL CALIPER

William G. Boyle, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Jul. 2, 1979, Ser. No. 54,222

Int. Cl.[3] G01B *5/12, 5/28*

U.S. Cl. 33—178 F **6 Claims**



1. A through the flow line (TFL) caliper for measuring and recording the maximum radius of a well flow conductor bore comprising

an articulated housing having a plurality of pivotally connected segments, including:

a first segment:

a plurality of feeler means housed therein and extendable radially therefrom engagable with the bore wall of said well flow conductor, and

resilient urging means associated with each of said feeler means, each feeler means being independently extendable to sense a variation in the radius of said well flow conductor bore wall;

a second segment:

recording means housed therein responsive to extension of said each feeler means sensing said variations in the radius of said well flow conductor bore wall,

chart means associated with said recording means for graphically recording said sensed variation in the radius of said well flow conductor bore wall,

a lead screw axially traversing said second segment and extending into a portion of said first segment, the recording means being carried on said lead screw,

the portion of said lead screw just entering said first segment being flexible whereby bending of said articulated housing occurring at the junction of said first and second segments causes bending of said portion of said lead screw, and

a drive frame for rotating said recording means; and

drive means operably connected to said drive frame and engageable with the bore wall of said well flow conductor, for driving said drive frame as the caliper moves in a direction toward the entry point of the well flow conductor.

4,247,986

PROJECTION MEASURING SCALE

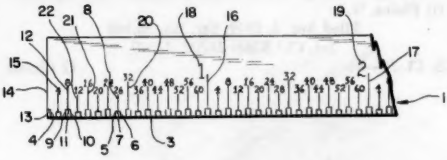
Robert C. Burroughs, 11208 Evans Trail Apt. 102, Beltsville, Md. 20705

Continuation-in-part of Ser. No. 11,586, Feb. 16, 1970, abandoned, which is a continuation-in-part of Ser. No. 561,925, Jun. 30, 1966, abandoned. This application Nov. 18, 1975, Ser. No. 632,968

Int. Cl.[2] B43L *7/00*

U.S. Cl. 33—494 **3 Claims**

1. A measuring ruler having a straight measuring edge and a first and second set of lineal graduations representing a unit of measure, said first set of lineal graduations being equally spaced apart, said second set of lineal graduations being equally spaced apart, said lineal graduations being perpendicular to said measuring edge, said first set of lineal graduations intersecting said measuring edge and representing odd numbered graduations, said second set of lineal graduations representing even numbered graduations and being parallel with said first set and spaced from said measuring edge, there being a plurality of individual equally spaced geometrical patterns, each of said patterns being disconnected from adjacent geometrical patterns, said patterns being formed from lineal graduations selected from said first set, adjacent lineal graduations of said second set, and transverse lineal extensions, each of said patterns being formed by a first lineal graduation extending



from said measuring edge being joined by a said transverse extension with a second lineal graduation adjacent to said first lineal graduation and also extending from said measuring edge, said transverse extension being perpendicular to the two aforementioned lineal graduations to form an individual geometrical pattern, there being a lineal graduation of said second set intersecting said transverse extension midway between the two aforementioned adjacent lineal graduations, said lineal graduation of said second set having an adjacent numerical identification for quicker and easier reading.

4,247,987

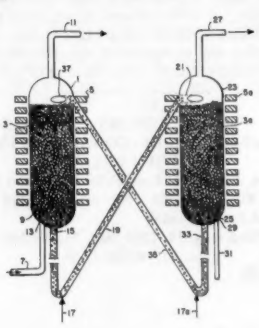
CONTINUOUS COUNTERCURRENT FLUID-SOLIDS CONTACTING PROCESS STABILIZED BY A MAGNETIC FIELD

Costas A. Coulaloglou, Morristown, and Jeffrey H. Siegell, Westfield, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Sep. 26, 1979, Ser. No. 79,219

Int. Cl.[3] F26B *3/08*

U.S. Cl. 34—1 **25 Claims**



1. In a process for effecting fluid-solids contacting under fluidization conditions wherein a bed of suspended or levitated magnetizable particles are contacted within a contacting vessel with a fluid stream which passes through said bed in an ascending manner against the force of gravity, said bed being structured or stabilized by an applied magnetic field having a strength sufficient to suppress solids backmixing, the improvement which comprises: passing said bed of suspended magnetizable particles in a decending substantially countercurrent, plug-flow manner against said contacting stream, removing said bed particles from said contacting vessel, said process being operated in a manner such that the ratio of the difference

between the transition velocity and the operating velocity to the difference between the transition velocity and the normal minimum fluidization velocity ranges between −0.1 to +0.5 so as to achieve enhanced solids fluidity.

4,247,988

PROCESS FOR REMOVING EXCESS WATER FROM ACTIVE CHLORINE COMPOUNDS

Sidney Berkowitz, Highland Park; James L. Manganaro, East Windsor, and Charles V. Juelke, Belle Meade, all of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Oct. 1, 1979, Ser. No. 80,882
Int. Cl.³ F26B *3/34*
U.S. Cl. 34—1 **9 Claims**

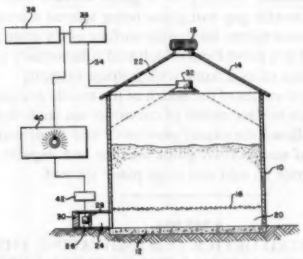
1. A process for the removal of hydrate water from active chlorine compounds, which comprises applying sufficient electromagnetic energy with frequencies lower than infrared to an active chlorine compound containing hydrate water to vaporize said hydrate water.

4,247,989

METHOD FOR IDENTIFYING AND MAINTAINING A DORMANCY INDEX IN STORED GRAIN

Sylvester L. Steffen, R.R. 3, New Hampton, Iowa 50659

Filed Dec. 26, 1978, Ser. No. 973,352
Int. Cl.³ F26B *7/00*
U.S. Cl. 34—20 **5 Claims**



1. A process which preserves maximum energy in live stored grain which includes:
   a storage structure having means for supplying throughputs of atmospheric air to the grain;
   comprising the monitoring of infrared radiation from the grain as the result of respiration of the grain irrespective of ambient temperatures; and controlling throughputs of air in response to conditions of infrared radiation so monitored.

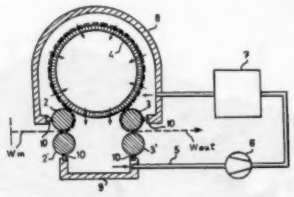
4,247,990

METHOD FOR CONTROLLING THE MOISTURE CONTENT OF A WEB OF SHEET MATERIAL

Per-Erik Ohls, Kaipola, and Mauri Soininen, Naantali, both of Finland, assignors to Valmet Oy Per-Erik Ohls, Finland

Continuation-in-part of Ser. No. 674,908, Apr. 8, 1976, Pat. No. 4,124,942. This application Jun. 19, 1978, Ser. No. 916,789
Claims priority, application Finland, Jan. 23, 1976, 760162; Apr. 9, 1976, 751075
Int. Cl.³ F26B *3/06*
U.S. Cl. 34—23 **10 Claims**

1. A method for obtaining a desired substantially uniform, ultimate moisture content in a paper web which has been dried so as to be within the hygroscopic range, comprising the steps of continuously transporting the web along a predetermined path through the interior of an enclosure which is closed off from the outer atmosphere with the web entering into the enclosure through an entrance region thereof and travelling out of the enclosure through an exit region thereof, and directly passing through the web as it is transported along the interior of the enclosure a treating gas having at least at the exit region of the enclosure an equilibrium condition corresponding to the desired ultimate moisture content of the web, so that as the web travels along the interior of the enclosure parts of the web having a moisture content greater than said desired



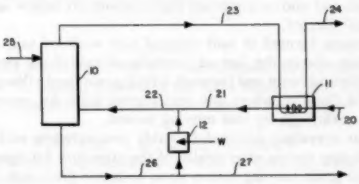
moisture content will become drier and parts of the web having a moisture content less than the desired moisture content will gain moisture with the average moisture content of the web closely approaching the desired moisture content by the time that the web travels out of the enclosure at said exit region thereof.

4,247,991

INDUSTRIAL DRYING

Gurmukh D. Mehta, Warrenton, Va., assignor to InterTechnology/Solar Corporation, Warrenton, Va.

Filed Oct. 1, 1979, Ser. No. 81,001
Int. Cl.³ F26B *3/04*
U.S. Cl. 34—35 **2 Claims**



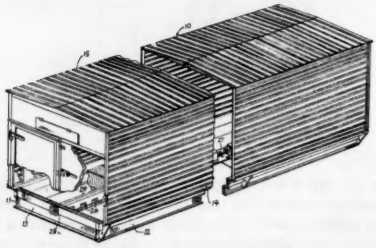
1. In a method for drying a product by mixing it in a chamber with a heated dry gas the improvement comprising:
   (a) introducing said product into a drying chamber;
   (b) flowing a stream of gas across the product to vaporize and remove moisture;
   (c) removing heat from said product after drying by a first heat pump;
   (d) circulating said gas through a heat exchanger to cool it;
   (e) further circulating said gas to a desiccant bed to dry it;
   (f) further circulating said gas to a second heat pump to cool it;
   (g) further circulating said gas to said heat exchanger to heat it;
   (h) heating said gas with the heat from said first heat pump;
   (i) reintroducing said gas into said drying chamber;
   (j) heating outside air with the heat produced by said second heat pump;
   (k) introducing said heated outside air to said desiccant bed in the recovery section to remove moisture;
   (l) circulating the air exiting said recovery section in heat exchanging contact with said outside air to heat it.

4,247,992

GRAIN-TOBACCO CURING BARN

James G. MacGregor, Wilmington, N.C., assignor to Consolidated Energy Products Company, Wilmington, N.C.

Filed Apr. 30, 1979, Ser. No. 34,252
Int. Cl.³ F26B *19/00*
U.S. Cl. 34—91 **4 Claims**



1. A convertible grain drying and tobacco curing barn structure including:

(a) a frame having longitudinally extended base rails defining an open base area,

(b) said rails supporting side and end walls and a roof carried by said walls,

(c) a grain moving means extending along a center line between said base rails through said open base area,

(d) a housing for said grain-moving means including a hollow center beam having a flat top wall and vertical side walls extending paralled to and between said base rails and having one end opening exteriorally of the end walls of the structure,

(e) removeable perforated floor members supported on said side base rails and said housing, between said side base rails and said center beam and substantially below said top wall thereof,

(f) means formed in said vertical side walls of said center beam above the line of junction of said floor members with said beam and through which grain freely flows from said floor members into said center beam for movement therethrough by said moving means,

(g) an operating means detachably connected to said grain moving means exteriorally of the structure for operating said grain moving means so as to move grain out of said open end of said beam exteriorally of the structure,

(h) an open floored furnace room at one end of the structure defined by said walls and a partition extending therebetween, and

(i) a heat deflector beneath said furnace room for directing heat therefrom into said open base area of the structure and through said perforated floor members and into said center beam for moving and drying grain therein.

4,247,993

NOZZLE APPARATUS FOR AIRBORNE PAPER WEB DRYERS

Yngve Lindström, Turku, Finland, assignor to Valmet Oy, Finland

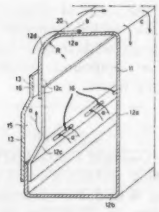
Filed Aug. 14, 1978, Ser. No. 933,525
Claims priority, application Finland, May 4, 1978, 781375
Int. Cl.³ F26B *13/20*
U.S. Cl. 34—156 **6 Claims**

1. Apparatus for airborne paper web dryers of the non-impingement or underpressure type over which a web is supported in a running plane comprising:

a blow box member defined by top web supporting and bottom wall portions, and back and front wall portions interconnecting said top and bottom wall portions, said blow box having an interior defined by said wall portions, said front wall portion having at least an upper portion which has a substantially planar configuration;

means provided on said front wall portion for defining an upwardly directed nozzle gap having a width and an exit plane, said nozzle gap being in fluid communication with the blow box interior whereby gas flow is directed through said nozzle gap from said blow box interior along said substantially planar upper portion of said front wall portion;

said front and top wall portions being interconnected by a



curved guide surface having a radius of curvature, said curved guide surface and front wall portion meeting at a guide surface entry edge plane and said guide surface and top wall portion meeting at a guide surface exit edge plane, said nozzle gap exit plane being spaced a predetermined distance below said guide surface entry edge plane and located at a point from which said substantially planar upper portion of said front wall portion extends;

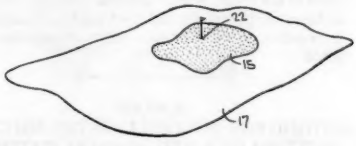
and the relative values of the width of the nozzle gap and the curved guide surface radius of curvature are such that said gas flow follows the planar portion of said front wall and a portion of said curved guide surface and departs from the latter prior to said exit edge plane thereof.

4,247,994

TEE LOCATED DEVICE FOR INDICATING THE POSITION OF A CUP IN A GOLF COURSE GREEN

Brown Cullen, Jr., 3611 Holston Rd., Louisville, Ky. 40222

Filed Dec. 5, 1978, Ser. No. 966,734
Int. Cl.³ G09B *29/10*
U.S. Cl. 434—153 **5 Claims**



1. A golfing aid for visually imparting to a golfer, while he is situated at the tee area of a hole of a golf course and even while he is standing at his teed up ball at the tee area, conside information regarding the size and shape of the green for such hole and the particular placement in the green of the cup comprising:

(a) a member adapted to be fixedly mounted immediately at the tee area and disposed in vertical relation to the ground and having a face viewable by the golfer from a position at his teed up ball in the tee area;

(b) means carried by said member for securely attaching it to the ground in such vertical relation to the ground so that said face can be visually viewed by a golfer while at the tee area, and even while at his teed up ball;

(c) means on said member viewably located at said face and

visually depicting on a reduced scale the exact size and shape of the green;

(d) said last means being formed over its entire physical extent with a patterned series of apertures that are viewable at said face and extend therethrough and which are arranged in an inch to inch spacement in relation to a yard to yard spacement on the green with an inch being representative of a yard of the green;

(e) a display element selectively inserted through the apertures and having an outer end bearing against the means visually depicting the green which end visually simulates the cup in the green;

(f) said display element having a shank selectively inserted in the apertures; and,

(g) means carried by the shank for positively locking it in a selected aperture so that the display element is secured in position against unauthorized displacement.

4,247,995

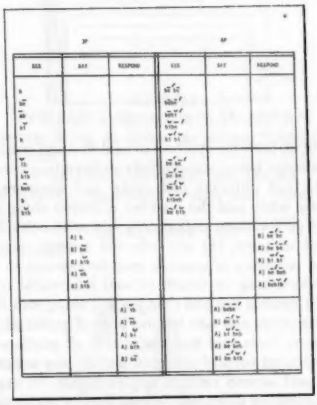
LANGUAGE TEACHING METHOD AND APPARATUS

Paul Heinberg, 1530 Ahuawa Loop, Honolulu, Hi. 96816

Filed Jul. 9, 1979, Ser. No. 56,075

Int. Cl.[3] **G09B** *19/04*

U.S. Cl. 434—185 **13 Claims**



1. A method of teaching a language to a plurality of students comprising the steps of:

(a) dividing the students into a plurality of dyads of two partners each;

(b) providing each partner of each dyad with one of a keyed pair of displays exhibiting items of at least one communication component;

(c) commencing with a first partner of each dyad as the sayer, the sayer producing a stimulus by uttering one of said items as the sayer perceives that one item;

(d) proceeding to the other partner of each dyad as the responder, the responder evaluating the stimulus for identity with a comparison item on the responder's display which responds to the uttered item on the sayer's display;

(e) the responder then responding by indicating the responder's perception of identity of the stimulus with the comparison item in a manner which enables the sayer to identify any error in either the stimulus or the response without attributing said error to either partner and thereby evaluate the correctness of the paired stimulus and response;

(f) continuously rotating the roles of the partners of each dyad as producer of stimuli, respondent to stimuli and evaluator of stimuli and responses; and

(f) rotating the partners to form new dyads at predetermined intervals.

4,247,996

WALKING AID DEVICE

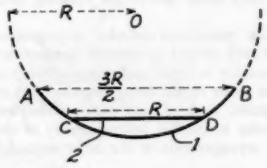
Pierre A. Grapin, and Georges M. Grapin, both of 5, rue Pierre Louÿs, 75016 Paris, France

Filed May 30, 1978, Ser. No. 910,908

Claims priority, application France, May 31, 1977, 77 16586

Int. Cl.[2] **A43B** *3/12, 5/00*

U.S. Cl. 36—103 **3 Claims**



1. A walking aid device which facilitates the normal forward movement of a walker on foot, without requiring a sliding movement or a rolling movement of auxiliary elements, and which requires use only of the muscles normally used in walking, the device comprising;

a lower part-circular base which is made of a non-skid material, has a width which is slightly less than that of the foot of a potential user, and extends over an angular sector corresponding to at least a subtending chord of a length equal to essentially 1.5 times the radius of curvature of said part-circular base;

a platform of essentially the same width as said part-circular base, and firmly fixed to the base and equidistant from the ends of said part-circular base, said platform being within said base and having an upwardly facing foot supporting surface lying essentially along a chord of said base of a length equal to said radius of curvature and which subtends an angular sector of 60 degrees of the base and is equidistant from the ends of said base; and

means for securing the user's foot to said platform against movement relative to said base.

4,247,997

TRENCH EXCAVATING AND SHORING APPARATUS

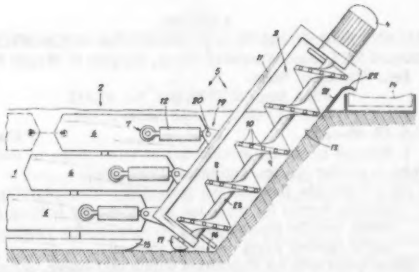
Friedrich W. Paurat, Kasselweg 29, 4230 Wesel 1, and Roland Paurat, Lippestr. 32, 4223 Voerde, both of Fed. Rep. of Germany

Filed Mar. 9, 1979, Ser. No. 19,095

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1978, 2810386

Int. Cl.[3] **E02F** *5/04;* **E02D** *17/08*

U.S. Cl. 37—82 **10 Claims**



1. A ditch-digging and trenching machine comprising:

support means receivable in a trench to be advanced by the cutting of a face thereof, said trench having a pair of lateral walls, said support means including a plurality of

spreadable elements disposed one above another and each comprising a pair of wall-engaging shields, and respective spreading means for urging the shields of said elements apart and against said lateral walls to grip the latter;

a cutter assembly adapted to be thrust against said face and including a frame extending substantially the height of said face, a worm conveyor journaled in said frame and having at least one flight provided with picks adapted to mill away said face and carry detritus therefrom to the surface, and drive means for rotating said worm conveyor.

a respective piston-and-cylinder arrangement connected between each of said spreadable elements and said frame and actuatable to force said worm conveyor against said face, said drive means being disposed out of said trench above grade, each of said piston-and-cylinder arrangements being actuatable independently of the piston-and-cylinder arrangements of the other spreadable elements; and

a transverse conveyor receiving detritus from said worm conveyor above grade for carrying the detritus away from the trench.

4,247,998

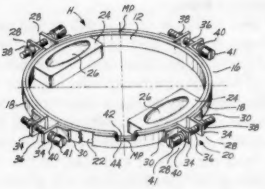
MACHINE EMBROIDERY HOOP

Mildred B. Foss, 22029-196th S.E., Renton, Wash. 98055

Filed Nov. 29, 1979, Ser. No. 98,494

Int. Cl.³ D05C *1/04*

U.S. Cl. 38—102.2 **10 Claims**



1. Machine embroidery hoops for stitching a piece of fabric therebetween, said hoops comprising a circularly shaped, fixed diameter inner hoop; an outer hoop having two pairs of substantially diametrically opposed, arcuate hoop segments quadrantly arranged around the circumference of said inner hoop to define a circular shape; and circumferentially acting, expandable and contractable connecting means for interconnecting the adjacent end portions of said adjacent outer hoop segments to vary the inside diameter of said outer hoop in selective fixed diameters, from a size larger than the outside diameter of said inner hoop to a size tightly clamping said outer hoop upon said inner hoop to thereby securely hold fabrics of varying thickness between said inner and outer hoops.

4,247,999

MEANS FOR STORING AND INDEXING MICROFICHE

Richard M. Latino, Worcester, Mass., assignor to Wright Line Inc., Worcester, Mass.

Filed Aug. 20, 1979, Ser. No. 67,952

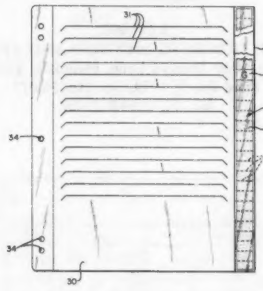
Int. Cl.³ G42F *21/00*; B65D *27/00*

U.S. Cl. 40—359 **7 Claims**

1. Storage means for storing one or more sheets of microfiche or similar articles, said means comprising:

(a) a relatively flat member provided with a plurality of pockets therein for receiving and releasably holding said sheets, said flat member being provided with a transparent sleeve running along one edge thereof;

(b) an index strip for disposition within said sleeve, said strip comprising a flat member having a top, a bottom, a front and a back, and being subdivided into first, second and third equally-spaced vertical columns by a pair of first lines of perforations, said first and third vertical columns outlying said second vertical column and said first and third vertical columns being each subdivided into a plurality of identical rectangular blocks by an equal number of equally-spaced second lines of perforations, said second lines of perforations in said first and third columns being aligned with one another so as to define a series of horizontal rows, and further wherein the first vertical column on said front side is covered with a solid color field, the second vertical column on said first side is covered with a first vertical sequence of symbols, the third column on the front side is covered with a second vertical sequence of symbols, the first vertical column on said rear sides is covered with said second vertical sequence of symbols, the second vertical column on said rear side is covered with said first vertical sequence of symbols, and the third vertical column on the rear side is covered with said solid



color field, with the symbols of said first and second vertical sequence being substantially uniformly located along said vertical columns and along said horizontal rows, whereby when said flat member is folded along said first lines of perforations so that only said solid color fields are exposed to view, (a) any selected symbol of said first vertical sequence of symbols may be exposed to view by first determining in which of said horizontal rows said selected symbol lies and then tearing along said first lines of perforations and said second lines of perforations so as to remove from said horizontal row all portions of said first and third vertical columns, and (b) any selected symbol of said second vertical sequence may be exposed to view by tearing along said second lines of perforations and folding along said first lines of perforations until said selected symbol is exposed.

4,248,000

RECEPTACLE TO TRANSPORT AND DISPLAY AN ARTIST'S FRAMED CANVAS

Sheldon Greenbaum, 11651 Stoneview Sq., Reston, Va. 22091

Filed Apr. 16, 1979, Ser. No. 30,570

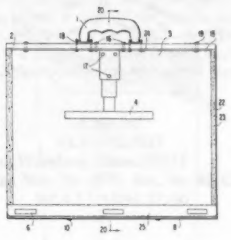
Int. Cl.³ G09F *21/02*

U.S. Cl. 40—530 **9 Claims**

1. A unit to transport and display an artist's canvas comprising:

an upright receptacle having upper and lower horizontal framing members and two side members, of a size to contain a framed canvas, said receptacle being constructed of flexible, vinyl, portfolio material with a pivoting handle attached to the receptacle and means to prevent movement of the canvas within the interior of the receptacle through the use of an interior angled surface upon which the canvas is fully supported, and having a restraining edge affixed to a lower horizontal member in combination with a padded, extendable clamping means having a high-tension spring and affixed to the upper horizontal member for clamping the canvas against the surface,

a front panel of transparent material which swings downward on a flexible hinge to form an enclosed unit when in a lowered position and which forms an entrance or exit opening for the canvas when in a raised or opened position, said transparent panel being secured in a lowered



position by means of closure devices installed along the bottom and sides of the receptacle,

said transparent panel being able to swing downward along the flexible hinge constructed along the top exterior of the unit, said panel to enable the position and condition of the canvas to be observed during transport.

4,248,001

PORTABLE SIGN DISPLAY DEVICE

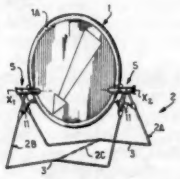
Alain Feuvray, 3 rue du Palais de justice, 71100 Chalon sur Saone, France

Filed Nov. 7, 1978, Ser. No. 959,193

Claims priority, application Switzerland, Nov. 22, 1977, 14257/77

Int. Cl.[3] **G09F** *7/00*

U.S. Cl. 40—602 **5 Claims**



1. In a portable sign display device comprising an indicator panel mounted on a stand to be placed on the ground in a service position, the stand comprising two similar U-shaped supporting elements each having a base member and two arms of equal length located transversely with respect to said base member, the sign display device comprising pivotal means for pivotally interconnecting one extremity of each arm of a supporting element with one extremity of one arm of the other supporting element and with the indicator panel, the pivotal means defining a substantially horizontal axis in the vicinity of the panel when the device is placed on the ground in the service position; the improvement in which at least one pair of pivotally associated arms are tubular and contain each a piston, a stop, and a spring inserted between said piston and said stop, the device also comprising cable means attached to the panel and having one end located inside the bottom portion of one tubular arm of said pair and attached to the piston of said arm and another end located inside the bottom portion of the other tubular arm of said pair and attached to the piston of the last-named arm.

4,248,002

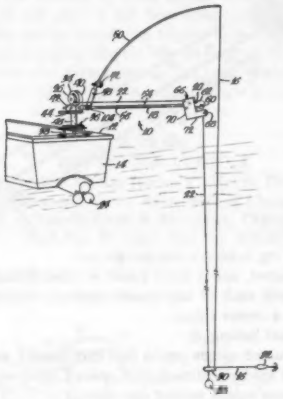
DOWNRIGGER SYSTEM

John R. McNellis, Paw Paw, Mich., assignor to Pacific-Atlantic Products, Ltd., Kalamazoo, Mich.

Filed Sep. 24, 1979, Ser. No. 78,518

Int. Cl.[3] **A01K** *97/00*

U.S. Cl. 43—27.4 **23 Claims**



13. A downrigger system suitable for trolling which comprises:

a frame for mounting on a boat;

a downrigger arm operatively connected to said frame;

a reel rotatably mounted to said frame;

a movable cable carriage on said downrigger arm;

an abutment means on said carriage;

a flexible cable passing through said carriage and adapted for winding upon said reel; and

stop means on said cable for coaction with said abutment means to move said carriage along said downrigger arm in a direction toward said boat.

4,248,003

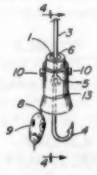
LIVE FISH BAIT ATTACHER

Adam A. Thesz, 2905 W. Shakespeare Ave., Chicago, Ill. 60647

Filed Aug. 3, 1979, Ser. No. 63,455

Int. Cl.[3] **A01K** *83/06*

U.S. Cl. 43—44.8 **7 Claims**



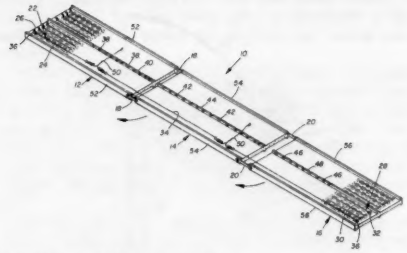
1. A fishing device for supporting a live bait in a horizontal position, so that it will remain alive and continue to swim to attract a game fish, including an inner core, a cylindrical sleeve surrounding the inner core and holding a fish hook and leader wire in a rigid vertic position within said inner core, an outer cylindrical shell surrounding said cylindrical sleeve for holding said live bait between said outer shell and said cylindrical sleeve and wherein said outer shell can be disengaged from the cylindrical sleeve to thereby release the live bait therefrom.

4,248,004

FISHING RIG HOLDER

Barry W. Trotter, P.O. Box 2185, Ardmore, Okla. 73401

Filed Sep. 10, 1979, Ser. No. 74,088
Int. Cl.³ A01K *97/06*
U.S. Cl. 43—54.5 R **7 Claims**



1. A fishing rig holder, comprising:

a first, a second, and a third panel member foldably connected, with each of said panel members including side walls and a center ridge,

said first panel having

spring-actuated means near a first end thereof, and

a series of leader-retaining slots spaced along the center ridge from near a second end thereof,

said second panel having

a series of leader-retaining slots spaced along the center ridge, and

a first end connected to the second end of the first panel,

said third panel having

spring-actuated means near a first end thereof, and a series of leader-retaining slots spaced along the center ridge from near a second end thereof, and

said second end connected to a second end of the second panel, with

the panels being foldable in a manner that a line attached the the spring-actuated means of the first and third panels is held taut around the exterior of the panels.

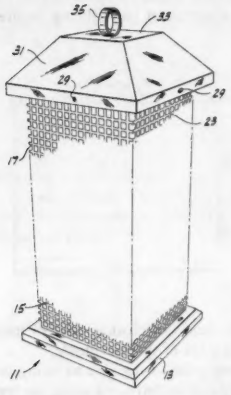
4,248,005

ELECTRONIC INSECT KILLER

Mark D. Hedstrom, Vincennes, Ind., assignor to Delta Promotions, Inc., Vincennes, Ind.

Filed May 29, 1979, Ser. No. 42,940
Int. Cl.³ A01M *1/04, 1/22*
U.S. Cl. 43—112 **15 Claims**

1. An electronic insect killer comprising a plurality of spaced electrodes adapted to be electrically contacted by the bodies of insects, means for attracting insects toward said electrodes, comprising at least one fluorescent lamp and a solid state inverter interconnected with said electrodes and also with said lamp for providing both a high voltage at high frequency and a lower AC voltage at said high frequency, said high AC voltage being supplied across said electrodes and said lower



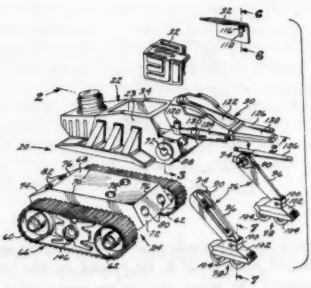
AC voltage being supplied to said lamp for ballast-free energization of said lamp.

4,248,006

RECONFIGURABLE MOVING ANIMAL SIMULATING TOY

Lawrence T. Jones, Playa Del Rey; Anson Sims, Granada Hills; Ashley G. Howden, Los Angeles, and Robert S. Lee, West Lake Village, all of Calif., assignors to California R & D Center, Culver City, Calif.

Filed Feb. 9, 1979, Ser. No. 10,827
Int. Cl.³ A63H *33/06, 17/04, 11/00, 11/10*
U.S. Cl. 46—17 **17 Claims**



1. A toy comprising:

an upper body section including a front portion configured to simulate an elephant head, the front portion having an elongated member configured to simulate a trunk, and including a seat adapted for receiving a toy figure for seating upon the seat;

a pair of ear members, each ear member being pivotably mounted to the front portion configured to simulate an elephant head and comprising at least two panel members angularly joined together, the ear members being further adapted to form a canopy over the seat; a lower body section to support the upper body section and having a plurality of joining surfaces so that the lower body section is operatively attachable to the upper body section in a plurality of configurations at the option of a player;

a pair of arm sections having attachment means for attachment to one of the upper and lower body sections in a

plurality of configurations thereby defining a plurality of modes of attachment, each of said configurations attaching the arm sections to one of the upper and lower body sections corresponding to one of said modes of attaching the lower body section to the upper body section, in each of said configurations the lower body section and the pair of arm sections supporting the upper body section, and

first means included in one of the upper and lower body sections for providing a capability of ejecting a liquid at the option of a player, the first means including a nozzle which is incorporated in the elongated member.

4,248,007

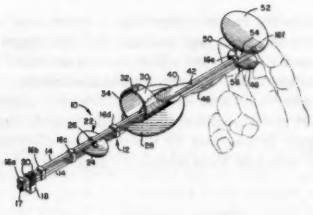
FLYING TOY

Samuel Gamburd, Wareham, Mass. 02571

Filed Nov. 13, 1979, Ser. No. 93,223

Int. Cl.³ A63H *27/00*

U.S. Cl. 46—79 **5 Claims**



1. A toy flying apparatus comprising:

a plurality of side-by-side elongate strips;

releasable means maintaining said strips in said side-by-side relation to form a boom type fuselage;

a planar mid fuselage generally circular horizontal wing releasably secured to the boom type fuselage;

at least one tubular aerodynamic member positioned adjacent the plane of said wing with the axis of the tubular member parallel to the longitudinal axis of the fuselage;

first, second and third guide fins projecting from the boom type fuselage respectively, vertically upwardly, vertically downwardly and horizontally in respect to a horizontal flight path of the flying toy;

a planar horizontally positioned lifter releasably connected to the fuselage forwardly of the wing;

a rudder having a generally horizontal stabilizer mounted adjacent the rearward end of the boom type fuselage; and

selectively movable weight means carried adjacent the forward end of the boom type fuselage.

4,248,008

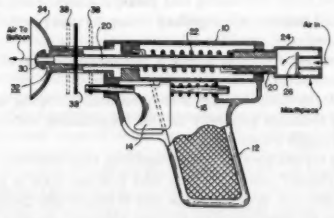
BALLOON EJECTING DEVICE

Alan R. Pitkanen, 3120 Ocean Dr., Manhattan Beach, Calif. 90266

Filed Aug. 27, 1979, Ser. No. 69,810

Int. Cl.³ A63H *3/06*

U.S. Cl. 46—88 **10 Claims**



1. A device for ejecting a toy balloon comprising: a housing; an elongated air tube rotatably mounted in the housing for rotation about its longitudinal axis; nozzle means mounted at one end of the air tube for receiving the neck of a toy balloon; a mouthpiece mounted at the other end of the air tube for permitting air to be blown into the interior of the balloon; torsional spring means connected to the air tube and to the housing to provide a rotational drive force to the air tube with respect to the housing to cause the air tube to spin about its longitudinal axis after it has been rotated about said axis to wind up the spring means; and trigger means mounted on the housing and engaging said air tube to hold the air tube against rotation after the spring means has been wound up and to release the air tube when the trigger means is actuated.

4,248,009

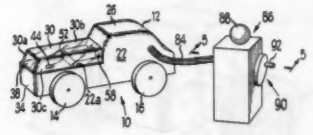
TOY MOTOR VEHICLE

Michael J. Ferris, Chicago; Burton C. Meyer, Downers Grove; Alan A. Hicks, and Henry Arias, both of Chicago, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Jan. 30, 1980, Ser. No. 116,929

Int. Cl.³ A63H *11/10*

U.S. Cl. 46—202 **14 Claims**



1. A toy vehicle comprising:

a body supported by wheel means for rolling movement on a supporting surface;

said body including first and second compartments in communication with each other and containing at least one element movable between said compartments and representing a unit of fuel for powering said vehicle;

one of said compartments including transparent wall means for viewing a fuel representing element present therein and the other of said compartments having opaque walls whereby a fuel representing element present therein is not readily visible from the exterior of said body;

means driven by rotation of said wheel means upon rolling movement of said vehicle for directing a fuel representing element visible in said one compartment toward said other compartment to represent the using of fuel, and

means independent of rotation of said wheel means and selectively actuatable for returning a fuel representing element from said other compartment to said one compartment representing the refueling of said vehicle.

4,248,010

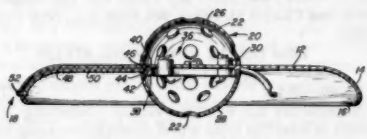
ILLUMINATED DISC-TYPE THROWING TOY

Daniel W. Fox, 202 E. Sharon, Phoenix, Ariz. 85022

Filed Jul. 23, 1979, Ser. No. 59,770

Int. Cl.³ A63H *33/26*

U.S. Cl. 46—228 **10 Claims**



1. A disc-type throwing toy comprising a generally circular disc having a laterally and reversely curved peripheral edge providing means for grasping the toy and throwing it, first

light emitting means mounted on the periphery of the disc, a housing mounted centrally on the disc and projecting laterally from each side thereof, said housing being hollow and including a plurality of openings therein, second light emitting means disposed interiorly of the housing for emitting light through the openings therein, and a power source disposed within said housing selectively connectable by a switch means to said first and second light emitting means so as to selectively energize the same, thereby enabling the throwing toy to be utilized during periods of darkness and enhancing the entertainment characteristics of the toy by closely simulating the popular conception of a flying saucer.

4,248,011

SELF-OPERATIVE STEERING FOR RADIO-CONTROLLED MODEL CAR

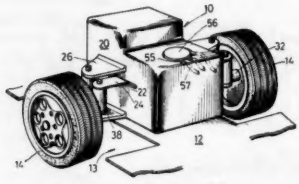
Juki Shimamura, Soka, Japan, assignor to Asahi Communications, Incorporated, Soka, Japan

Filed May 14, 1979, Ser. No. 38,549

Claims priority, application Japan, Sep. 26, 1978, 53-132214[U]

Int. Cl.³ A63H *29/22*

U.S. Cl. 46—254 **12 Claims**



1. A self-operative steering arrangement for a radio-controlled model car having first and second wheel-shaft receiving members with first and second steering means, respectively, on opposite sides of the car operative corresponding to radio-controlling signals by operation of a servomechanism, wherein the improvement comprises in combination:

a housing mountable to the chassis of said model car, said housing having said wheel-shaft receiving members and steering means mounted in co-operative position on both sides thereof;

drive means contained within said housing and capable of changing driving speeds and directions corresponding to control signals;

a reduction gear train driven by said drive means;

operative means engageable with said reduction gear train;

a tie rod connecting said first steering means with said second steering means; and

a connecting element attached to said operative means and engaging said tie rod such that said steering mechanism is actuable by said drive means to steer the model car.

4,248,012

LANE CHANGING CAR

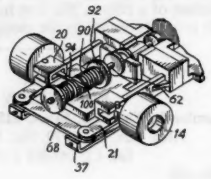
James S. Kirby, 2222 Gates Ave., Redondo Beach, Calif. 90278; Lawrence Jones, 8125 Zitola Ter., Playa Del Rey, Calif. 90291; Walter Moe, 13039 Sky Valley Rd., Los Angeles, Calif. 90049, and Charles M. Diker, 944 Fifth Ave., New York, N.Y. 10021

Filed Dec. 26, 1978, Ser. No. 973,139

Int. Cl.³ A63H *17/36*

U.S. Cl. 46—262 **7 Claims**

1. A miniature toy steerable vehicle comprising: a chassis including at least one front wheel pivotally mounted for steering movement and at least one rear wheel; a reversible electric motor; electrical pick-up means electrically connecting said motor to an external source of electric current; transmission means interconnecting said motor to said rear wheel to propel said vehicle in the forward direction irrespective of the direction of rotation of said motor; and steering means operatively coupling said motor to said front wheel, said steering means instantaneously turning said front wheel in a continuous uninterrupted motion in a first steering direction when the motor rotates in a clockwise direction and instantaneously turning said front wheel in a continuous uninterrupted motion in a second direction when the motor rotates in a counterclockwise



direction; said steering means comprising a worm gear connected to and rotatable with said motor, and a directional rod attached at one end to said front wheel, the other end of said directional rod tangentially engaged with said worm gear and traveling in the grooves of said worm gear, whereby displacement of said other end of said directional rod along the length of said worm gear in response to the direction of rotation thereof serves to turn said front wheels to steer said vehicle.

4,248,013

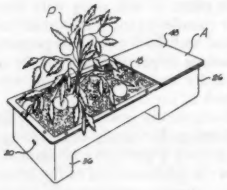
HYDROPONIC BEDDING TRAY APPARATUS

Donavan J. Allen, Rt. 8, Box 287, Greer, S.C. 29651

Filed Aug. 9, 1979, Ser. No. 65,092

Int. Cl.³ A01G *25/00, 31/00*

U.S. Cl. 47—59 **9 Claims**



1. Hydroponic plant growing apparatus wherein a plant is supported in a support media and fed a metered amount of a nutrient solution, said apparatus comprising:

a bedding tray having spaced end walls and spaced side walls extending between said end walls for containing said media;

a bottom floor carried in said tray for supporting said media and plant therein;

longitudinal nutrient supply trough means formed in said bottom floor containing said nutrient solution and supplying said nutrient via capillary action to said plant through said media;

supply means for maintaining a predetermined level of said nutrient solution in said trough means;

said bottom floor having a longitudinally sloping contour being inclined generally in the longitudinal direction of said trough means; and

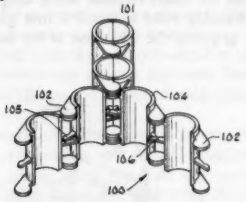
opening means formed in said bedding tray adjacent an end wall thereof toward which said bottom floor is inclined whereby rain water and the like is effectively drained out of said bedding tray in a manner avoiding dilution of said nutrient solution.

4,248,014

SEEDLING CONTAINERS

Geoffrey A. Williames, 137 Normanby St., Warragul, Victoria, Australia

Filed Jan. 4, 1979, Ser. No. 825
Claims priority, application Australia, Oct. 27, 1978, 6548/78
Int. Cl.³ A01C *11/02*
U.S. Cl. 47—86 **6 Claims**



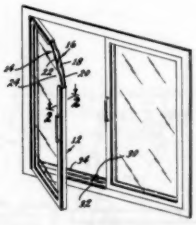
1. Apparatus for use in propagating plants and supporting such plants for transport by toothed driving means, said apparatus comprising a plurality of containers open at each end and each of which forms a compartment for seeds or seedlings and a propagating medium for propagating the seeds or seedlings in the container and enabling the seeds or seedlings and propagating medium to be removed intact from said container through an open end thereof; a set of lugs carried by each of said containers and projecting laterally from opposite sides thereof to confront lugs of an adjacent container; and means pivotally coupling the confronting lugs of adjacent containers to form a linked chain of containers, said lugs spacing adjacent containers from one another and forming therebetween a gap of such size as to accommodate a tooth of said driving means.

4,248,015

MULTI-PANE GLAZED DOOR DEFROSTING SYSTEM

Michael E. Stromquist, Studio City, and James J. Heaney, Glendale, both of Calif., assignors to Anthony's Manufacturing Company, Inc., San Fernando, Calif.

Filed Mar. 3, 1976, Ser. No. 663,548
Int. Cl.³ F06B *7/00*
U.S. Cl. 49—70 **5 Claims**



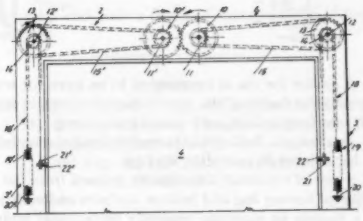
1. In a door adapted to be moveably mounted on a refrigerated cabinet the combination comprising:
an outer transparent panel;
an inner transparent panel having an unexposed surface and a surface exposed to normally refrigerated air within the cabinet in the normally closed position of the door;
mounting means for mounting said outer and said inner transparent panels in spaced relationship; and
electrically heating means disposed in heating relationship with said inner transparent panel for selectively heating said inner panel responsive to a selected operative position of the door to prevent the formation of frost thereon, said electrical heating means comprising a resistive-conductive optically transparent coating positioned on the unexposed surface of said inner panel, and further comprising means for selectively applying electrical power to said coating to generate heat therein for heating said inner panel; and
wherein said means for selectively applying electrical power has a high level and lower level power output mode, and comprising switch means responsive to the operated position of the door with respect to the cabinet for applying said lower level power to said coating when the door is in a closed position and for applying said high level power to said coating when the door is in an open position.

4,248,016

INTEGRAL UNIT COMPRISING A RAISABLE AND TILTABLE DOOR PANEL MEMBER AND A FRAME STRUCTURE THEREFOR CONTAINING THE DRIVING MECHANISM

Vito Pecchioni, 102 Manuel Lemos St., Maipu, Mendoza, Argentina

Filed Jun. 5, 1979, Ser. No. 45,695
Claims priority, application Argentina, Jun. 12, 1978, 272575
Int. Cl.³ E05F *15/00*
U.S. Cl. 49—200 **7 Claims**



1. An integral unit comprising a raisable and tiltable door panel member and a frame structure therefor containing a driving mechanism, the frame comprising an upper frame member and two corresponding door jamb members, and a door panel member which may be raised and simultaneously tilted from its lowered vertical closing position to a raised substantially horizontal opened position, and vice versa, in response to the operation of the driving mechanism, the tilting movement being obtained by means of at least one rigid restraining link member pivotally connected at its upper end to the upper frame member and at its lower end to a corresponding lateral edge of the door panel member at a point located higher than the point at which the lifting force of the driving mechanism is applied, wherein said upper frame member and said door jamb members are hollow and said driving mechanism comprises: (a) an electric driving motor having a shaft; (b) a reduction gear-box having an input shaft, said input shaft being coupled to the driving motor shaft; (c) a first pair of linear flexible transmission members closed upon themselves, each forming a substantially horizontally running closed loop having an inner end near the central region of the upper frame member and an outer end near a corresponding outer end region thereof, the inner end being drivingly coupled to said gear-box output shaft; (d) a second pair of linear flexible transmission members, each forming an upper loop and having two free ends hanging vertically within said hollow door jamb members, the upper loop being drivingly coupled to said outer of the loop of a corresponding one of said first pair of linear flexible transmission members; (e) a pair of drive coupling members coupling a first of said two free ends of a corresponding one of said second pair of linear flexible transmission members to the corresponding lateral edge of the door panel member at the point thereof to which the lifting force must be applied; and (f) a pair of weight compensating members to each of which the other of said two free ends of a corresponding one of said second pair of linear flexible transmission members is connected; all the components (a) to (f) being entirely contained within the inner spaces of said upper frame member and

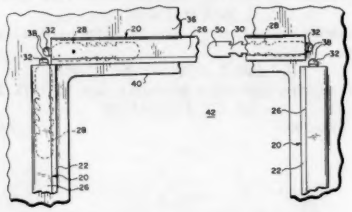
door jamb members, except that only one end of each of said drive coupling members (e) project through a corresponding longitudinal slot provided along the face of the respective door jamb member opposing said door panel member.

4,248,017

REMOVABLE STRETCH GASKET FOR OVEN DOOR

Alfred M. Micallef, Fort Worth, Tex., assignor to Jamak, Inc., Weatherford, Tex.

Filed Dec. 18, 1978, Ser. No. 970,545
Int. Cl.[3] E06B 7/16
U.S. Cl. 49—493 **14 Claims**



1. A gasket for use in connection to an oven for sealing the door and the frame of the oven when the door is engaged to the frame face to face, said gasket comprising:

A. an elongate, hollow elastomeric extruded member with at least the ends providing sockets,

B. a pair of relatively short inserts formed from flat strips of metal having top and bottom surfaces and each insert

i. having an elongate generally rectangular body with a hook formation at one end thereof,

ii. the remainder of the body having its maximum cross section configuration and dimensions such as to fit snugly within one of the sockets,

iii. a plurality of lateral notches formed along opposite edges of the body between the ends thereof, and rounded wings separating said notches and defined thereby, said wings extending to the maximum width of the body,

iv. and each insert being engaged in one of the respective sockets with only the hook formation protruding, and

c. there being a bond of cured RTV adhesive interconnecting the body of each insert with the interior surface of the socket in which it is engaged and including portions of said bond in said notches.

4,248,018

PLASTIC MULTIPLE TRACK WINDOW WITH SLIDEABLE AND REMOVEABLE PANES, AND ELEMENTS THEREOF

Jorge Casamayor, Columbus, Ohio, assignor to Plaskolite, Inc., Columbus, Ohio

Filed Jun. 5, 1978, Ser. No. 912,078
Int. Cl.[2] E06B 1/04
U.S. Cl. 49—504 **16 Claims**

1. A framing strip for a multiple track window of substantially plastic construction in which two glazing panes are held adjacent their side edges in separate channnels of side framing strip members which attach the window to a predetermined location, and the panes are moveable within and removeable from the channels of the side framing strip, in which:

the side framing strips include three rigid linearly extending extruded plastic elements,

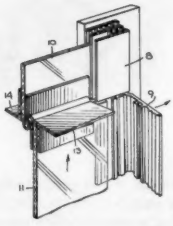
said elements being first and second outer elements disposed in a relationship with respect to a common central element in which:

an outer element is releasably interlockable by means for interlocking with the central element, and

the other outer element is disposed in a parallel relationship adjacent the central element; and

the three linearly extending extruded elements so disposed form two open channels between the three linearly extending elements when the outer element is interlocked with the central element;

the first channel between the releasably interlockable central element and the outer element being adapted to receive and to releasably hold and seal a first glazing pane by means for gripping the frist pane at the side edge of the pane, and



the second channel being adapted to receive the second glazing pane in a sliding relationship with respect to the side edge of the pane; and in which

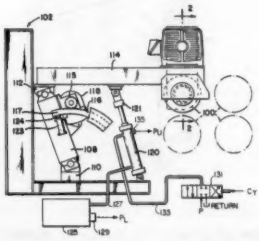
the side framing strip members which form the two channels consist of an extruded dual durometer plastic and include a hinge portion joining the releasably interlockable rigid elements at the edge thereof opposite the open edge of the channel formed, said hinge portion further consisting of a co-extruded plastic of softer durometer than the durometer of the plastic of the rigid linearly extending elements.

4,248,019

WORKPIECE CONDITIONING GRINDER CONTROL SYSTEM

Royal T. Hawley, Everett; John P. Veale, Kirkland, and Jack L. Odell, II, Snohomish, all of Wash., assignors to Western Gear Corporation, Washington, D.C.

Filed Nov. 28, 1977, Ser. No. 855,162
Int. Cl.[3] B24B 7/02
U.S. Cl. 51—45 **9 Claims**



1. In a grinding machine for conditioning the surface of an elongated workpiece, said machine having a grinding wheel rotatably mounted on a movable grinding head, longitudinal actuating means for providing relative reciprocating movement between said grinding wheel and said workpiece along the longitudinal axis of said workpiece, and transverse actuating means for providing incremental transverse movement between said grinding wheel and said workpiece, a grinding machine control system, comprising:

a hydraulic cylinder having first and second longitudinally spaced fluid ports;

a piston slidably received in said cylinder thereby dividing

said cylinder into first and second sections communicating, respectively, with said first and second fluid ports, said piston including a rod projecting from one end of said cylinder with said cylinder and rod connected between said grinding head and a fixed anchor to move said grinding wheel normal to the surface of said workpiece as said piston moves in said cylinder;

bias means for maintaining the pressure in the first section of said cylinder substantially constant;

hydraulic fluid control means connected to said second fluid port for selectively causing hydraulic fluid to flow into and out of the second section of said cylinder responsive to a control signal;

command signal generating means for selecting a command signal corresponding to a desired magnitude of grinding action of said grinding wheel on said workpiece;

pressure sensing means for measuring the pressure in the second section of said cylinder to produce a pressure feedback signal indicative of the force of said grinding wheel against said workpiece in a direction normal to the surface of said workpiece;

grinding action sensing means for producing a grinding action feedback signal indicative of the actual magnitude of grinding action of said grinding wheel on said workpiece;

signal processing means receiving said command signal, said grinding action feedback signal and said pressure feedback signal for generating a grinding action error signal which is proportional to the difference between said command signal and said grinding action feedback signal, a pressure command signal corresponding to said command signal indicative of the pressure in the second section of said cylinder expected to achieve said desired magnitude of grinding action, and a pressure error signal which is solely proportional to the difference between said pressure command signal and said pressure feedback signal; and

summing means for adding said grinding action error signal and said pressure error signal to produce said control signal such that said control signal is a function of both the deviation of the actual magnitude of the grinding action from a target value and solely the deviation of the actual grinding force from a target value.

4,248,020

PRECAST CONCRETE STAIRWAY MODULE

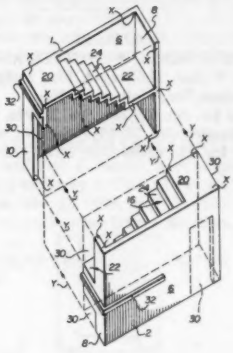
Zenon A. Zielinski, and Czeslawa Zielinski, both of Montreal, Canada, assignors to Canadian Patents & Development Ltd., Ottawa, Canada

Filed Jun. 7, 1979, Ser. No. 46,470
Claims priority, application Canada, Jul. 31, 1978, 308414
Int. Cl.[3] E04F *11/14*
U.S. Cl. 52—185 **4 Claims**

1. A precast concrete stairway module, comprising:

(a) a concrete wall assembly having an access opening and which is C-shaped in plan view to provide a side wall and two end wall portions, and

(b) a concrete stair flight assembly within the wall assembly and extending from a marginal edge portion of a first one of the end wall portions, along an inner side of the side wall, to a mid-height portion of a second one of the end wall portions, the stair flight assembly being moulded integrally with the wall assembly and comprising a landing at each end with a flight of stairs extending therebetween.

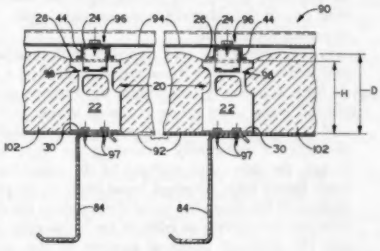


4,248,021

SUPPORT MEANS FOR WALL OR ROOF STRUCTURE

Frederick W. Dyer, Burlington, Canada, assignor to H. H. Robertson Company, Pittsburgh, Pa.

Filed Aug. 22, 1979, Ser. No. 68,501
Int. Cl.[3] E04B *1/74*
U.S. Cl. 52—404 **14 Claims**



1. A two-piece support assembly for sheathing panels, comprising:

a clip having a connecting web, a first leg extending laterally from an upper web end and a base at a lower web end, and a first slot in said connecting web spaced from and generally parallel with said first leg;

a subgirt having a first end overlying said first leg and a second end remote from said first leg, said subgirt including:

an end plate extending therefrom in overlapping relation with said connecting web,

a connecting strip extending from said end plate through said first slot and being inclined relative to said end plate toward said first leg thereby to slideably connect said first end of said subgirt to said clip, the width of said connecting strip being less than the length of said slot;

a tongue extending longitudinally outwardly from said second end of said subgirt; and

a second slot provided in an exterior face of said subgirt and being spaced from said end plate;

whereby a plurality of the support assemblies may be installed with the subgirts thereof in end-overlapped relation, and said tongue of one said support assembly engaged in the second slot of a previously installed support

assembly, and with said second slot of said one support assembly receiving the tongue of a subsequently installed support assembly.

4,248,022

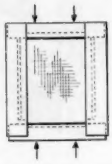
EXTERIOR WINDOW SHUTTER ASSEMBLY

C. Murchison Walker, Hollywood, Fla., assignor to Weather Control Shutters, Inc., Hollywood, Fla.

Continuation of Ser. No. 659,248, Feb. 2, 1976, abandoned. This application Oct. 22, 1979, Ser. No. 86,698

Int. Cl.³ E06B 7/08; E04C 2/38

U.S. Cl. 52—473 **5 Claims**



1. A shutter assembly comprising:

a frame including

opposed jamb members each having a generally rectangular cross-sectional configuration and being provided with a recess, an opening in an inner wall in communication with said recess, and boss means extending into said recess, said opening being of a width substantially less than the width of the recess,

upper and lower frame members, each member including an inwardly facing slot having opposed sidewalls, at least one of the sidewalls being provided with resilient engaging means, and

means interconnecting said opposed jamb members and said upper and lower frame members in such a manner as to form a generally rectangular rigid frame; and

expanded metal sheet means mounted within said frame, said expanded metal sheet means being provided with a plurality of outwardly extending air vent defining means, the side edge portions of the expanded metal sheet means being disposed an an angle to the principal portion of the expanded metal sheet means, the distance between the outermost edge of each side edge portion and the adjacent principal portion of the expanded metal sheet means being greater than the width of said opening in the jamb member, said side edge portions being disposed in said recess of the jamb members in such a manner that they are substantially locked therein, and said boss means being so positioned with respect to said opening and said side edge portion that in the event that said side edge portion should bend under loading it will engage said boss means to restrict further bending and thereby maintain said side edge portion within said recess, and the resilient engaging means engaging a plurality of air vent defining means along the upper and lower edges of the expanded metal sheet means in such a manner that the upper and lower edges of the expanded metal sheet means are substantially locked within the upper and lower frame members.

4,248,023

INSULATED CERAMIC FIBER REFRACTORY MODULE

David R. Dunlap, Mexico, Mo., assignor to A. P. Green Refractories Co., Mexico, Mo.

Filed Jul. 26, 1979, Ser. No. 60,915

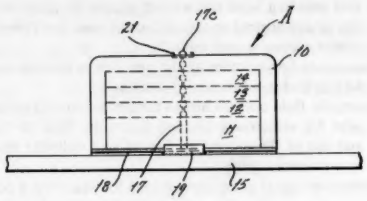
Int. Cl.³ E04B 1/78

U.S. Cl. 52—506 **15 Claims**

1. An insulating module for lining a wall of a furnace and like equipment comprising:

(a) an outer shell-like form of ceramic fiber insulating material,

(b) at least one layer of ceramic fiber insulating material



positioned within the outer shell and parallel to the wall to which the module is to be attached,

(c) means for joining said shell and layer, and

(d) means for attaching the module to the wall.

4,248,024

CENTERING FOR CASTING CONCRETE ROOFS

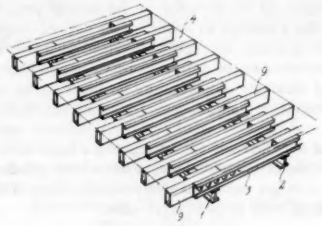
Claes-Inge S. Dahlström, Patron Lars väg 18, S-12140 Huddinge, Sweden

Filed Feb. 28, 1979, Ser. No. 15,774

Claims priority, application Sweden, Mar. 2, 1978, 7802401

Int. Cl.³ E04G 25/00

U.S. Cl. 52—632 **4 Claims**



1. In a centering for casting concrete roofs, comprising a rectangular steel construction including at least two longitudinal girders and a plurality of cross beams welded thereto in spaced relationship to support a flat form board, the improvement in which each one of said cross beams, at least at one end thereof, is provided with an extension arm displacable in the transverse direction of the centering, said arm slidably engaging the cross beam in a manner such that its upside lies flush with a geometrical plane toughing the top surfaces of all cross beams, and said arm being displacable with its end outside of the end of the cross beam to support a form board, the width of which is larger than the nominal width of the centering, each one of said cross beams consists of a pair of channel irons welded in spaced relationship to the longitudinal girders with their webs facing one another and with the flanges turned outwards, and the extension arm is in the shape of a square tube arranged at each end of each one of said cross beams within the space between the webs of the channel irons, said arms being displacable with slip fit in the longitudinal direction of said cross beams, the length of said square tube being maximum half the length of said cross beam, its width corresponding substantially to the width between said channel irons, and its height being substantially equal to the height of said channel irons, each square tube at the bottom side of the end thereof projecting into the space between the channel irons, is provded with a plate welded thereto, said plate having a greater width than the space between the channel irons, and a flat bar steel is welded over the extreme ends of the bottom flanges of said

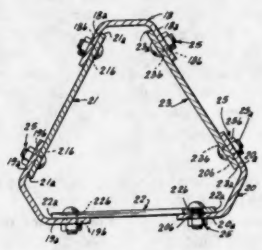
channel irons to form a stop member for engagement with the plate on said square tube.

4,248,025

KNOCK DOWN POLE CONSTRUCTION

Richard A. Kleine, Peoria, and Warren J. Byers, Morton, both of Ill., assignors to Unarco Industries, Inc., Chicago, Ill.

Filed Aug. 8, 1979, Ser. No. 64,757
Int. Cl.³ E04H *12/08*
U.S. Cl. 52—731 **8 Claims**



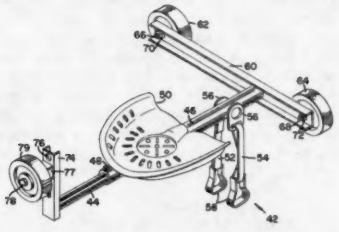
1. A knock down tapered pole for power-line use comprising a series of vertically connected sections, each of said sections being comprised, as follows: a spaced series of generally U-shaped bent-corner plates of uniform cross-sectional thickness, said corner plates having divergently extending marginal legs with holes positioned in longitudinal spaced relation along each of said margins, a plurality of spaced trapezoidal-shaped flat plates each positioned between a pair of said corner plates, the flat plates each having nonparallel marginal edges which converge in the direction extending towards a top end of the pole and which diverge in the direction extending towards a lower end of the pole, and a series of fasteners cooperable with said holes joining opposite margins of said flat plates along said nonparallel marginal edges in assembled relation with said marginal legs of said corner plates.

4,248,026

TROLLEY FOR INSTALLING PREFABRICATED BUILDING PANELS

James A. Tipton, 1243 Browns Ferry Rd., Chattanooga, Tenn. 37419

Filed Jul. 2, 1979, Ser. No. 53,745
Int. Cl.³ F04D *15/00*
U.S. Cl. 52—749 **6 Claims**



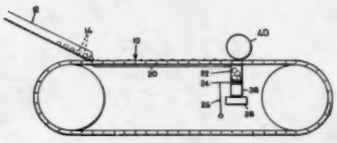
1. A trolley for aiding in the installation of sidewall panels of prefabricated metal buildings having a longitudinally extending eave strut and a purlin including laterally facing substantially horizontally disposed ledges, said trolley comprising a frame including a laterally extending support, a bracket secured to one end of the support and a hanger secured to the other end of the support, first wheel means rotatably carried by said bracket for rolling on said ledge of the eave strut, second wheel means rotatably carried by said hanger for rolling on said ledge of the purlin, a seat secured to said support for carrying a workperson facing said bracket, and foot support means straddling said support intermediate said seat and said first wheel means for supporting the feet of the workperson while on said seat, whereby the workperson may propel the trolley longitudinally between the eave strut and the purlin to install said panels.

4,248,027

APPARATUS FOR FILLING CONTAINERS

William Cleary, and Ivan J. Farrow, both of King's Lynn, England, assignors to Cleary & Co. Ltd., King's Lynn, England

Filed Nov. 22, 1978, Ser. No. 962,879
Claims priority, application United Kingdom, Dec. 8, 1977, 51054/77
Int. Cl.³ B65B *5/10, 1/06, 1/08*
U.S. Cl. 53—244 **4 Claims**



1. An apparatus for simultaneously filling each of a plurality of containers with a plurality of articles, said apparatus comprising in combination:

feed conveyor means for conveying and retaining said articles, said conveyor means comprising endless belt means having an upper run and a lower run spaced below the upper run and with its upper run moving in a given direction, said conveyor means defining a given number of longitudinal rows of apertures transversely aligned with each other, said apertures being open at the top and bottom, and a tray along a portion of said upper run and immediately below said belt means and extending in said direction from a first point to a second point to thereby close the bottom of said apertures along said portion of said upper run only;

filling means above said portion and adjacent said first point for filling each aperture with a single article only;

a plurality of hoppers positioned in the space between said runs and in said direction from said second point and immediately adjacent thereto, each hopper having an open top and an open bottom and being below a respective longitudinal row, whereby when an article in an aperture passes said second point it falls from the aperture into the respective hopper;

another conveyor means for moving empty containers in batches beneath the hoppers and for removing filled containers after filling, each batch corresponding in number to said given number, said other conveyor means being in said space, transversely aligned to said runs, and positioned below the hoppers, and including means for arresting the batch for filling with the batch being arrested with each container of the batch being below a respective hopper and held so arrested until the container is filled; and

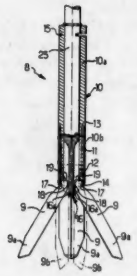
gate means positioned below the open bottoms of the hoppers and being movable between a position at which the bottoms of the hoppers are closed and a position at which the bottoms of the hoppers are open, said gate means being in the latter mentioned position when an empty batch of containers is located beneath the hoppers to thereby permit the contents of the hoppers to descend into the containers and being moved to the first mentioned position thereof when the containers are full, to thereby allow a batch of filled containers to be replaced by a batch of empty containers ready to be filled.

4,248,028

GRID FOR GUIDING RECEPTACLES AND SEIZING HEAD EQUIPPED WITH SUCH A GRID

Edgar Dardaine, Sorel-Moussel, France, assignor to E. P. Remy et Cie, Dreux, France

Filed Mar. 27, 1979, Ser. No. 24,413
Claims priority, application France, Jan. 22, 1979, 79 01516
Int. Cl.[3] B65B *39/02*
U.S. Cl. 53—248 **6 Claims**



1. A grid packer for encasing containers such as bottles, said packer having an array of elements for guiding the containers into a carton, each element including a vertical support and at least one movable finger depending from the support, each finger having a free end which is resiliently forced to a position spaced from the axis of the support, wherein said support comprises:

a sleeve having a lower free end and a stop means spaced from said free end;

a ring slidably arranged within said sleeve adjacent the free end;

a spring coaxially arranged within the sleeve between the stop means and the ring, said spring resiliently urging the ring axially toward the free end of the sleeve; and

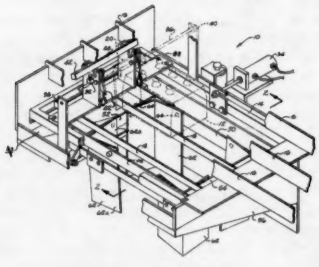
means for supporting said at least one finger for pivotal motion about an axis adjacent to the free end of the sleeve and tangent to a circle coaxial with said sleeve, said ring contacting said finger for pivoting the free end thereof outwardly from the axis of the sleeve in response to the axial force exerted by said spring.

4,248,029

CASE PACKER LOADING DEVICE

Thomas P. Hartness, and Robert G. Hartness, both of Greenville, S.C.

Filed May 14, 1979, Ser. No. 38,479
Int. Cl.[3] B65B *39/02*
U.S. Cl. 53—248 **7 Claims**



1. A grid set for use on an article loading machine for guiding a charge of articles carried on a drop assembly from said drop assembly to an empty case carried therebelow, said case having four walls intersecting at substantially right angles defining four corners, said grid set comprising:

a frame carried below said drop assembly;

said frame including four elongated support members joined at right angles defining four corners;

a guide arm carried in each corner of said frame;

each of said guide arms including a pair of elongated downwardly extending planar side walls joined at a substantially right angle;

means for pivotally supporting said guide arms in respective corners of said frame with the lower ends of said guide arms being pivoted towards the center of said frame;

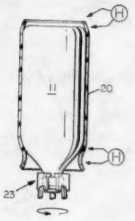
whereby when said charge of articles is dropped through said grid set for being loaded into said case said articles strike said guide arms forcing said arms back into a respective corner of said case ensuring that said case is fully extended for receiving said articles therein.

4,248,030

METHOD FOR ASSEMBLING PLASTIC SLEEVE PREFORMS AND CONTAINERS

Russell W. Heckman, Perrysburg, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed May 4, 1979, Ser. No. 36,204
Int. Cl.[3] B65B *21/26, 53/06*
U.S. Cl. 53—397 **10 Claims**



1. The method of labeling a container having a base, a first body portion adjacent the base having an exterior surface of predetermined circumference and a second body portion extending from said first body portion having an exterior circumference less than said predetermined exterior circumference of said first body portion, said method comprising the steps of providing a preformed, tubular sleeve of preprinted, heat-shrinkable, organic, thermoplastic, thin film material having a circumference slightly greater than the predetermined exterior circumference of said first body portion of said container, opening said sleeve into open tubular arrangement, retaining the container in an inverted position, transporting the said container and sleeve in vertically-aligned relation with said open sleeve retained over said container, telescoping said sleeve downwardly over the exterior surfaces of said body portions of said inverted container, and heating said sleeve to shrink it into snug essentially wrinkle-free engagement with said exterior surfaces of said body portions therebeneath.

4,248,031

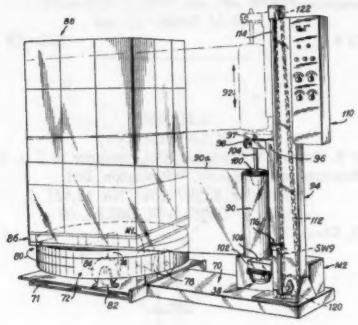
STRETCH WRAP MACHINE

Albert J. Del Pozo, Jr., Flushing, N.Y., assignor to Favorite Plastic Corporation, Brooklyn, N.Y.

Filed Sep. 25, 1978, Ser. No. 945,472
Int. Cl.[3] B65B *11/04*
U.S. Cl. 53—556 **25 Claims**

1. A spiral stretch wrap machine comprising means for holding a roll of stretch wrap material in a vertical orientation; a horizontal turntable for supporting a load to be wrapped; means for turning said turntable; means for moving said roll in the vertical direction such that following the securement of the

free end of said roll to said load, stretch wrap material is pulled off from said roll and wound in a spiral around said load; and means for automatically applying a continuously increasing brake force to said roll to inhibit the pulling off of stretch wrap material therefrom, said brake force increasing continuously



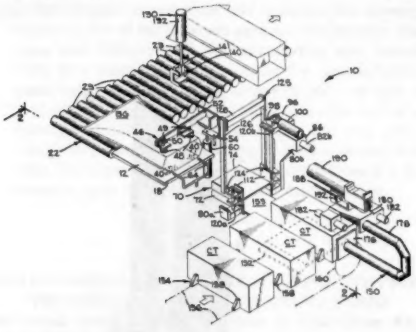
from a minimum value to a maximum value during the initial wrapping of said load and thereafter remaining at said maximum value, said turntable turning through at least one-sixteenth of a turn and at most one complete turn during the time that said brake force is increasing from said minimum value to said maximum value.

4,248,032

BAGGING APPARATUS

Quentin T. Woods, and William D. Gerverdinck, both of San Jose, Calif., assignors to FMC Corporation, San Jose, Calif.

Filed Jun. 13, 1979, Ser. No. 48,106
Int. Cl.[3] B65B *43/34, 43/30*
U.S. Cl. 53—570 **4 Claims**



1. An apparatus for inserting an article into a flexible bag comprising:

means for supporting a bag in a flat selected orientation;

means mounted adjacent one end of said bag supporting means for partially opening the mouth of said bag;

means for supporting the article to be bagged in a position which is closely spaced from said bag mouth and in an orientation which is longitudinally aligned with said bag;

means for pushing the article from said article supporting means and into said bag mouth; and

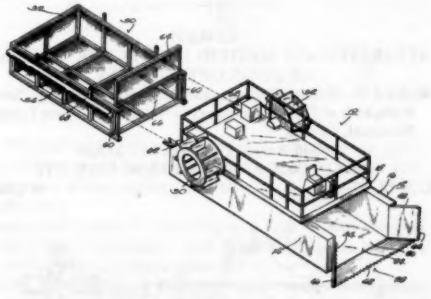
means for fully opening said bag mouth and for thereafter guiding the article into the bag while holding said bag in a fixed position, said last-named means including a lower guide member having a channel configuration for slidably receiving the bottom of the article as it is pushed from said article supporting means, carriage means for supporting said lower guide member for movement along a path of travel which is longitudinally aligned with said bag supporting means with said lower guide member being mounted to said carriage means such that its bottom wall is at a level above said bag supporting means, means for retractably moving said carriage means from an initial position where the outer end of said lower guide member which is proximal said bag supporting means is spaced from the mouth of said bag to an extended position where said outer end is inserted into said bag, an upper guide member for slidably engaging the upper portion of the article, means for mounting said upper guide member to said carriage means directly above said lower guide member for movement along a path of travel of said lower guide member, said lower and upper guide members being receivable in the mouth of a bag which has been partially opened by said bag mouth opening means and means for elevating said upper guide member after both the upper and lower guide members have been inserted into said bag by said carriage means, said guide members being sufficiently long relative to the length of the article to support the leading end of the article above said bag supporting means until the article is substantially fully inserted into said bag by said pushing means, said elevating means including frame means rigidly mounted to and extending upwardly from said upper guide member, drive means initially remotely positioned from said frame means when said carriage means is in said initial position, and said drive means including means for engaging said frame means when said carriage means has been moved to its extended position where said lower and upper guide members are inserted into said bag.

4,248,033

THRU-FLOW AQUATIC HARVESTER

Charles B. Bryant, N67 W32380, Wildwood Point Rd., Hartland, Wis. 53029

Filed Mar. 7, 1979, Ser. No. 17,982
Int. Cl.[3] A01D *44/00*
U.S. Cl. 56—8 **2 Claims**



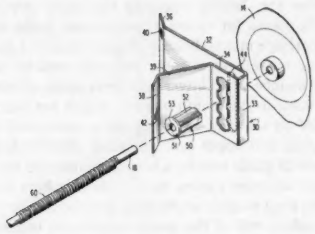
1. A method of harvesting aquatic vegetation comprising the steps of providing a harvest vessel with a through tunnel extending fore and aft and above and below the water line, and with converging wings defining a collection throat, providing a transport and collection barge having flotation means to independently float the barge, said barge having a rigid frame and foraminous walls with a fill opening and gate therefor, coupling the transport and collection barge to the harvest vessel with the fill opening in line with the tunnel and causing relative movement between the vegetation and the harvest vessel to cause compacted vegetation to move in line through the tunnel and into the collection barge without elevating the vegetation from the water and when the collection barge is filled to set it free and connect a second collection barge to the tunnel and repeating the foregoing steps.

4,248,034

ADJUSTABLE AXLE SUPPORT SYSTEM FOR LAWN MOWER

Harold P. Jackson, and Richard W. Rhinehart, both of McDonough, Ga., assignors to McDonough Power Equipment, Division of Fuqua Industries, Inc., McDonough, Ga.

Filed Sep. 24, 1979, Ser. No. 78,502
Int. Cl.[3] A01D *67/00*
U.S. Cl. 56—17.2 **13 Claims**



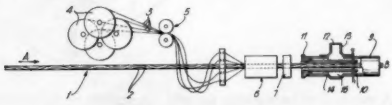
1. In a lawn mower having a blade housing including a rotatable cutting blade rotatable generally in a horizontal plane, and front and rear wheel axles with wheels on the opposite ends thereof for supporting the housing on the ground; an adjustable axle support system for supporting the wheels and axles at a preselectable elevation relative to the ground surface to provide a desired cutting height of the cutting blade, the system comprising axle support brackets generally vertically therein receiving the axles with the axles being adjustable in a vertical plane by movement along the slots, said brackets having a plurality of enlarged openings spaced along said slots, bearing sleeves slidable along the axles for reception in the enlarged openings of the brackets, and spring means about the axles releasably holding the bearings in the enlarged openings of the brackets for maintaining the wheel and axle in the brackets against vertical movement, said bearing sleeves being slidable along said axles out of said enlarged openings for permitting the axles to be adjusted along the slots in the brackets.

4,248,035

APPARATUS AND METHOD USED IN THE ASSEMBLY OF FIBRE OPTIC CABLES

Richard P. Skillen, Lachine, and Frederick D. King, Smiths Falls, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Apr. 2, 1979, Ser. No. 25,833
Int. Cl.[3] D02G *3/44;* D01H *13/04;* G02B *5/16*
U.S. Cl. 57—6 **10 Claims**



1. A method of assembling a fibre optic cable structure comprising:

moving longitudinally extending constituent members and a central strength filament along feed paths towards a laying-up station while providing slack in the constituent members to inhibit tensile stresses in the members as they are fed towards said station;

laying-up the members upon the surface of the filament in the laying-up station; and

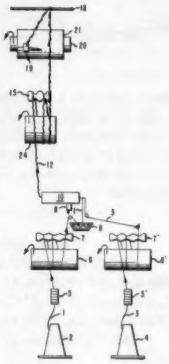
after laying up of the members upon the filament, moving the filament with laid-up members along a feed path from the laying-up station and directing a fluid stream in the downstream direction and parallel to the feed path to cause the fluid stream to flow along the surface of the central strength filament to reduce contact pressure between the laid-up members and the surface of the filament and relocate the members in position on said surface by the use of the slack and reduce longitudinal tension in the members.

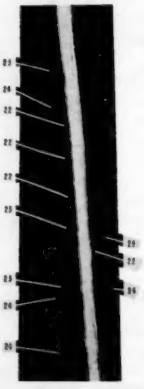
4,248,036

BULKY YARN

Eugene R. Barron, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 8, 1979, Ser. No. 18,527
Int. Cl.[3] D02G *3/34;* D02J *1/08*
U.S. Cl. 57—227 **6 Claims**





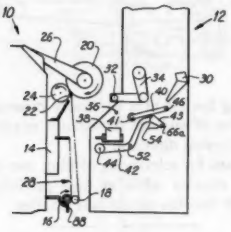
1. A bulky continuous core and effect yarn comprising continuous filament core yarns substantially free from loops of polymeric material consisting of from 65 to 93 percent of the total filaments by weight and the remainder of the total filaments being continuous filament effect yarns having a denier per filament of up to 5.0 which are inserted between the filaments of the core yarn and protrude from the surface of the core yarn in a mixture of crunodal and arch-like loops and wherein the majority of effect yarn filament loops remain away from the surface of the core yarn for a distance less than 4.0 mm along the length of the core yarn.

4,248,037

YARN POSITIONING MEANS FOR OPEN-END SPINNING MACHINE PIECING APPARATUS

Charles R. Martin, Seneca; Philip B. Tarbox, Pendleton, both of S.C., and Stephen W. Yates, Bolton, England, assignors to Platt Saco Lowell Limited, Helmshore, England

Filed Oct. 2, 1979, Ser. No. 80,978
Int. Cl.[3] D01H *15/02*
U.S. Cl. 57—263 **9 Claims**



1. Yarn positioning means for a mobile yarn piecing apparatus movable along the length of an elongate multi-station, open-end spinning machine to a position forwardly of a machine station requiring servicing; said station including a spinning unit, a yarn take-up package disposed at an elevation above said spinning unit, and a yarn delivery roll assembly disposed at an elevation below said spinning unit; said delivery roll assembly including a drive roll and a stub-type pressure roll defining therebetween a nip extending in the length direction of said machine; said yarn positioning means comprising:

yarn retrieving means upon said apparatus for retrieving yarn from said take-up package and for extending a line of retrieved yarn generally forwardly from said take-up package;

and yarn transfer means upon said apparatus for forming a bight in a line of the retrieved yarn at a first location distal from said delivery rolls, for transporting said yarn-line bight to a second location wherein the same is below a plane tangential to the undersurface of said stub-type and is upon that side of the vertical plane of the free end of said stub-type distal from the other end of said roll, and for thereafter permitting and guiding lateral movement of said yarn-line bight from said second location toward a third location upon the other side of said vertical plane.

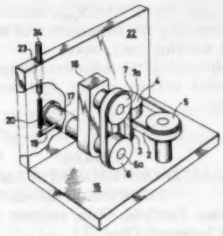
4,248,038

FALSE TWISTING METHOD AND APPARATUS FOR PRODUCING CRIMPED FILAMENT YARNS

Isao Takai, Komatsu, Japan, assignor to Oda Gosen Kogyo Kabushiki Kaisha, Komatsu, Japan

Filed Sep. 19, 1979, Ser. No. 78,589
Claims priority, application Japan, Sep. 27, 1978, 53-118033
Int. Cl.[3] D02G *1/04;* D01H *7/92*
U.S. Cl. 57—336 **20 Claims**

1. A false twisting method of nipping type for producing crimped filament yarns, comprising arranging at least two power-driven twister members having work surfaces of a relatively small friction coefficient therebetween in such manner that these work surfaces successively cross each other in contact relationship at a selected angle to provide a crossing zone successively between these work surfaces, and feeding at least one filament yarn through said crossing zone to thereby subject said filament yarn to false twisting while nipping this filament yarn between said successively contacting work surfaces and urging, at the same time therewith, this filament yarn to advance successively from said crossing zone, the improvement wherein: said nipping is performed by releasably urging said twister members, which form said crossing zone, against



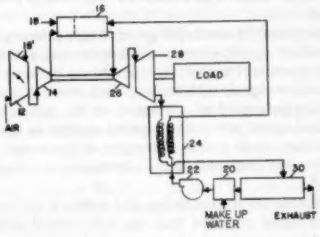
each other so that the pressure of contact between said work surfaces of these twister members gains a desired value.

4,248,039

REGENERATIVE PARALLEL COMPOUND DUAL FLUID HEAT ENGINE

Dah Y. Cheng, Los Altos Hills, Calif., assignor to International Power Technology, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 705,355, Jul. 14, 1976, Pat. No. 4,128,984, which is a continuation-in-part of Ser. No. 534,479, Dec. 12, 1974, Pat. No. 3,978,661. This application Dec. 6, 1978, Ser. No. 967,108
The portion of the term of this patent subsequent to Dec. 12, 1995, has been disclaimed.
Int. Cl.[3] F02C *7/00*
U.S. Cl. 60—39.05 **28 Claims**



1. The method of operating a dual fluid heat engine at maximum efficiency and/or throughput, for a given turbine inlet temperature, which engine comprises:

a chamber;

compressor means for introducing a first gaseous working fluid into said chamber, said compressor means having a predetermined pressure ratio (CPR);

means for introducing a second liquid-vapor working fluid in the form of a vapor within said chamber at a defined second/first working fluid ratio (XMIX);

means for heating said first gaseous working fluid and said second working fluid in the vapor form in said chamber at a defined specific heat input rate (SHIR);

turbine means responsive to the mixture of said first and second working fluids for converting the energy associated with the mixture to mechanical energy, the temperature of said mixture entering said turbine means defining the turbine inlet temperature (TIT);

counterflow heat exchanger means for transfering residual thermal energy from said exhausted mixture of first and second working fluids to said incoming second working fluid, said method comprising the steps of:

pre-heating the second working fluid in the heat ex-

changer to a superheated vapor state prior to its introduction within the chamber; and

selecting XMIX and SHIR so that for a given value of TIT, XMIX is substantially equal to or is greater than $XMIX_{peak}$, where $XMIX_{peak}$ occurs by both:

(i) maximizing the temperature of the superheated second working fluid vapor; and

(ii) minimizing the effective temperature of the exhausted mixture of the first and second working fluids.

4,248,040

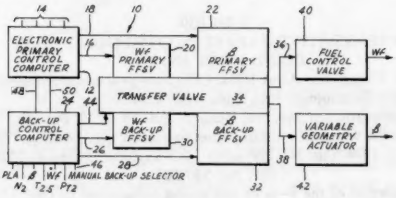
INTEGRATED CONTROL SYSTEM FOR A GAS TURBINE ENGINE

Howard B. Kast, Fairfield, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Jun. 4, 1979, Ser. No. 45,512

Int. Cl.³ F02C 9/04

U.S. Cl. 60—39.27 **5 Claims**



1. An improved integrated control system for a gas turbine engine which includes:

fuel control means for metering the flow of fuel to the engine in accordance with a received fuel control position signal; and

primary control means for generating a primary fuel control position signal; wherein the improvement comprises:

back-up control means for generating a back-up fuel control position signal, said back-up fuel control position signal being generated as a function of the actual engine rotational speed when the control system is operating in a primary mode and as a function of the power lever angle when the control system is operating in a back-up mode; and

transfer means for receiving said primary fuel control position signal and said back-up fuel control position signal and for providing said primary fuel control position signal to said fuel control means when the control system is operating in a primary mode and said back-up fuel control position signal to said fuel control means when the control system is operating in a back-up mode.

4,248,041

GAS TURBINE ENGINE POWER PLANT

Geoffrey L. Wilde, Turnditch; Maurice I. Taylor, Allestree, and Geoffrey P. Medland, Castle Donington, all of England, assignors to Rolls-Royce Limited, London, England

Filed Oct. 27, 1978, Ser. No. 957,033

Claims priority, application United Kingdom, Dec. 3, 1977, 50457/77

Int. Cl.³ F02K 1/10, 3/06

U.S. Cl. 60—226 R **5 Claims**

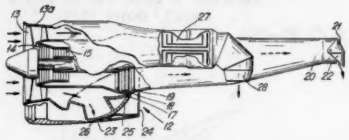
1. A V/STOL gas turbine power plant for aircraft comprising:

a main gas turbine core engine having an air intake and an exhaust gas propulsion nozzle;

at least one auxiliary gas turbine engine having an air intake and a vectorable exhaust gas nozzle;

a fan;

a fan duct surrounding said fan and in continuous open communication with both the air intake of said main gas turbine core engine and the air intake of said at least one auxiliary gas turbine engine for continuously supplying a portion of the fan air thereto, said fan duct including two fan air exhaust nozzles for ejecting another portion of the fan air from the fan duct, one of said fan air exhaust nozzles ejecting fan air in a vertically downward direction and the other of said fan air exhaust nozzles ejecting fan air in a horizontal direction;



and valve means for selectively closing one of said two fan air exhaust nozzles while at least partially opening the other of said two fan air exhaust nozzles.

4,248,042

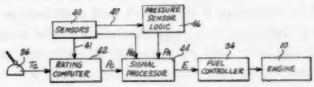
ENGINE THRUST CONTROL SYSTEM

Hals N. Larsen, Redmond, Wash., and Peter W. Kamber, Hawi, Hi., assignors to The Boeing Company, Seattle, Wash.

Filed Nov. 3, 1978, Ser. No. 957,639

Int. Cl.³ F02K 3/06; F02C 9/08

U.S. Cl. 60—243 **28 Claims**



1. In a multi-spool turbofan engine including a high-speed spool, a control system for providing stabilized changes in engine thrust corresponding to changes in the setting of a power level control; said control system comprising:

means responsive to the setting of said power level control for generating a command signal representing a commanded thrust in terms of a corresponding commanded value of a pressure-related parameter;

engine sensors connected to said engine for monitoring an actual value of said parameter and the rotational speed of said high-speed spool;

a feedback loop including an error loop and a stabilization loop, said error loop and said stabilization loop responsive to said engine sensors for reflecting an actual value of said parameter and a rate of change of said rotational speed respectively;

a signal processor responsive to said command signal and to said feedback loop for generating an error signal; and

a fuel-rate controller responsive to said error signal for controlling the rate of fuel flow to said engine.

4,248,043

APPARATUS FOR STORING ENERGY AND GENERATING ELECTRICITY

Donald E. Stewart, Sr., 768 N. First St., Hampton, Va. 23664

Filed Sep. 28, 1978, Ser. No. 946,567

Int. Cl.³ F16D 31/06

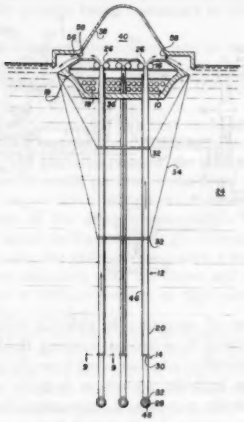
U.S. Cl. 60—325 **40 Claims**

1. Apparatus for storing energy and generating electricity, said apparatus comprising:

(a) first means for storing energy in the form of compressed gas and

(b) second means for generating electricity by allowing the gas compressed by said first means to expand, doing useful work, said second means comprising:

(i) a tube at least a first end of which is disposed in a body of liquid and the second end of which is maintained at a lower ambient pressure than the first end;
(ii) third means for introducing the liquid into said tube beneath the surface of the liquid;
(iii) fourth means for introducing the gas compressed by said first means into said tube beneath the surface of the liquid;



(iv) at least one turbine disposed at the second end of said tube in operative contact with the liquid and gas flowing therethrough; and
(v) fifth means for maintaining the second end of said tube at subatmospheric pressure,

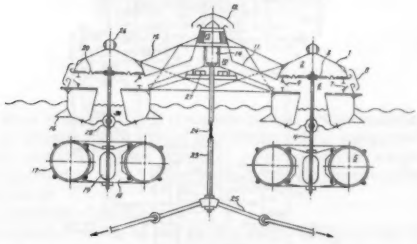
whereby the expanding gas forces the liquid through said turbine, generating electricity.

4,248,044

APPARATUS FOR WAVE POWER GENERATION UTILIZING LARGE MASS DYNAMIC ENERGY ABSORPTION

Marvin F. Woodilla, 163 Albert St., Torrington, Conn. 06790

Filed May 15, 1978, Ser. No. 906,009
Int. Cl.³ F03B *13/12*
U.S. Cl. 60—398 **15 Claims**



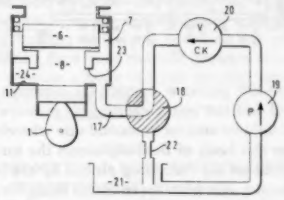
1. An apparatus for converting fluid wave energy into useful electrical energy comprising
an electric generator,
a central air turbine connected thereto,
floating air pump pods surrounding said turbine,
a plenum chamber connecting said pods and turbine,
a pump piston moveable in each pod,
gas springs in each pod,
means for controlling the fluid gas volume of said springs adjacent said pistons,
subsurface containers of liquid and a pump rod connected to each piston and container whereby the action of the waves on the pods and subsurface containers pumps and causes air to draw through said turbine and actuate the generator.

4,248,045

MEANS FOR SELECTIVELY TRANSMITTING DRIVE

David L. Turner, 5, Clarendon Crescent, Leamington Spa, Warwickshire, England

Filed Apr. 4, 1979, Ser. No. 26,965
Claims priority, application United Kingdom, Apr. 4, 1978, 13103/78
Int. Cl.³ F15B *7/02*
U.S. Cl. 60—537 **6 Claims**



1. A device for transmitting drive selectively and comprising a body, an input element, an output element, a control element and means for conveying a signal to the control element, wherein each of said elements is guided for movement relative to the body independently of the other elements, the elements collectively define, at least in part, a main chamber for containing liquid, there is provided a seat engageable by the control element and the control element is movable in response to said signal away from said seat to provide between the seat and the control element a gap which forms an extension of the main chamber and remains in communication with the main chamber throughout movement of the input element for accommodating liquid displaced by movement of the input element, the control element has a first surface which is engageable with the seat and a second surface which faces away from the seat and is exposed to the liquid in the main chamber, whereby the pressure in said liquid in the main chamber acts on the second surface for urging the control element unto the seat when said first surface is engaged with the seat, a portion of the control element is disposed outside the main chamber and the control element can be moved further from the seat by the application to the control element via said gap of pressure established in the main chamber, whereby upon application of said signal to the control element, the input element can move inwardly of the main chamber without causing displacement of the output element outwardly of the main chamber.

4,248,046

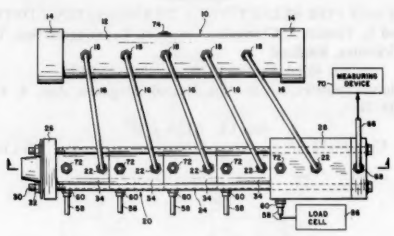
VENT ACCUMULATOR FOR HYDRAULIC INTEGRATOR

Robert M. Fornell, Tulsa, Okla., assignor to Unit Rig & Equipment Co., Tulsa, Okla.

Filed Apr. 23, 1979, Ser. No. 32,138
Int. Cl.³ F01B *7/00*; F15B *21/04*; F01B *31/12*
U.S. Cl. 60—567 **5 Claims**

1. A vent accumulator for a hydraulic integrator of the type having at least three pistons arranged in end-to-end relationship within an elongated housing, wherein each piston is adapted to move under hydraulic pressure in a direction away from a first longitudinal end of the housing toward a second and opposite longitudinal end of the housing, wherein the pistons are in axial alignment and in serial contact with each other within the housing, wherein each piston is defined as

having a first side directed towards said first longitudinal end of said housing and a second side directed towards said second longitudinal end of the housing, wherein each of the pistons except for said last piston is provided with means for receiving hydraulic fluid under pressure from a load cell on said first side of each said piston, wherein each of said pistons except for the last two pistons is provided with an air vent communicating on said second side of each said piston, wherein the second side of



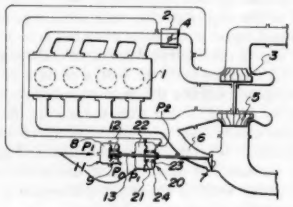
the next-to-last piston is operatively connected to said last piston, and said last piston exerting its pressure on a body of hydraulic fluid located on its second side whereby the pressure exerted on this body of fluid represents the total of the pressures exerted on the remaining pistons by the load cells connected thereto; said vent accumulator being formed by a hollow closed chamber, and a conduit connected from each of the air vents of said integrator to said vent accumulator.

4,248,047

EXHAUST BYPASS VALVE ASSEMBLY FOR AN EXHAUST GAS TURBO-SUPERCHARGER

Yasuo Sumi, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jun. 15, 1979, Ser. No. 48,846
Claims priority, application Japan, Nov. 18, 1978, 53-142746
Int. Cl.³ F02B *37/00*
U.S. Cl. 60—602 **6 Claims**



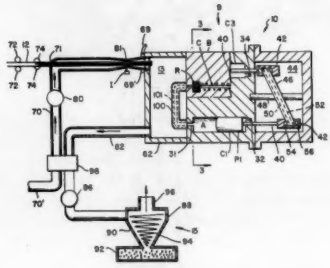
1. An exhaust bypass valve assembly for an internal combustion engine including a throttle valve downstream of a compressor of an exhaust gas turbo-supercharger for controlling intake mixture flows, a bypass causing part of exhaust gases to flow therethrough without passing through an exhaust gas turbine and an exhaust bypass valve provided in said bypass, comprising first response means which is operated by a pressure upstream of said throttle valve to open said exhaust bypass valve to a larger extent as the pressure upstream of said throttle valve becomes higher and second response means which is operated by a pressure difference across said throttle valve to open said exhaust bypass valve to a larger extent as the pressure difference becomes larger, said first and second response means being arranged in series with a rod secured to said exhaust bypass valve, thereby closing and opening the exhaust bypass valve.

4,248,048

ENGINE OPERATED BY A NON-POLLUTING RECYCLABLE FUEL

E. Quimby Smith, Jr., Camarillo, Calif., assignor to Q Corporation, Troy, Mich.

Continuation-in-part of Ser. No. 671,280, Mar. 29, 1976, Pat. No. 4,129,003. This application Sep. 1, 1978, Ser. No. 937,553
Int. Cl.³ F02G *1/00*; F23B *7/00*
U.S. Cl. 60—645 **17 Claims**



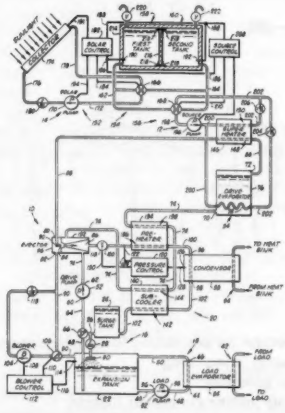
1. A system of operating an external combustion engine which is operated by a heated working fluid of the engine, comprising providing a fuel selected from the group consisting of magnesium hydride, aluminum hydride and magnesium aluminum hydride, providing a combustion chamber in association with the engine, burning said fuel in said combustion chamber, and subjecting the working fluid of the engine to the heat generated by the burning fuel in said combustion chamber.

4,248,049

TEMPERATURE CONDITIONING SYSTEM SUITABLE FOR USE WITH A SOLAR ENERGY COLLECTION AND STORAGE APPARATUS OR A LOW TEMPERATURE ENERGY SOURCE

Patrick B. Briley, Tulsa, Okla., assignor to Hybrid Energy Systems, Inc., Stillwater, Okla.

Continuation-in-part of Ser. No. 948,043, Oct. 2, 1978, abandoned. This application Jul. 9, 1979, Ser. No. 55,524
Int. Cl.³ F25B *27/00*
U.S. Cl. 62—2 **35 Claims**



1. A temperature conditioning system comprising:
refrigeration storage means containing a refrigerant separated into a liquid phase and a gaseous phase;

a load pump having an inlet portion and an outlet portion, the inlet portion being connected to the portion of the refrigerant storage means containing the liquid refrigerant;

a load evaporator connected in a heat exchanging relationship with a refrigeration load, the load evaporator having an inlet portion and an outlet portion, the inlet portion being connected to the outlet portion of the load pump and the outlet portion being connected to the refrigerant storage means;

a drive pump having an inlet portion and an outlet portion, the inlet portion being connected to the portion of the refrigerant storage means containing the liquid refrigerant;

a drive evaporator connected in a heat exchanging relationship with a heat source, the drive evaporator having an inlet portion and an outlet portion, the inlet portion being connected to the outlet portion of the drive pump;

an ejector having a drive inlet portion connected to the outlet portion of the drive evaporator, a suction inlet portion connected to the portion of the refrigerant storage means containing the gaseous refrigerant, a mixing portion in fluid communication with the drive and suction inlet portions, and a diffuser portion in fluid communication with the mixing portion; and

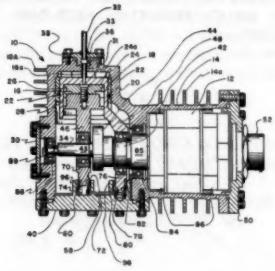
a condensor connected in a heat exchanging relationship with a heat sink, the condensor having an inlet portion and an outlet portion, the inlet portion being connected to the diffuser portion of the ejector and the outlet portion being connected to the refrigerant storage means.

4,248,050

DOUBLE-YOKE BALANCED COMPRESSOR

Peter Durenec, Annandale, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 22, 1980, Ser. No. 114,443
Int. Cl.[3] F25B *9/00*
U.S. Cl. 62—6 **15 Claims**



1. In an improved closed cryogenic cooling system comprising an electric motor driven dual-reciprocating compressor which provides pressure waves of a low molecular weight working fluid to a cold finger regenerator; the improvement comprising:

a compressor housing;

a crankshaft driven by said electric motor and comprised of at least two axially offset crankshaft cams and at least two cylindrical support cams thereon wherein said at least two axially offset crankshaft cams is comprised of two diametrically axially offset crankshaft cams having axes parallel with the axis of said crankshaft and exactly offset 180° from each other with one of said diametrically axially offset crankshaft cams rotating in a piston yoke race of a piston and piston connecting rod mass for imparting linear motion to said piston and with a second of said diametrically axially offset crankshaft cams rotating in a cylinder yoke race of a cylinder and cylinder connecting rod mass for imparting linear motion of said cylinder in the opposite direction from the instantaneous direction of said piston, said piston and piston connecting rod mass and said cylinder and cylinder connecting rod mass having equal weights and equal stroke distances to provide the same average mass acceleration product resulting in balanced forces in the linear direction;

piston and cylinder air bearing and guide means for providing smooth linear motion and for eliminating lateral motion of said piston and piston connecting rod mass and said cylinder and cylinder connecting rod mass to prevent vibration and noise; and

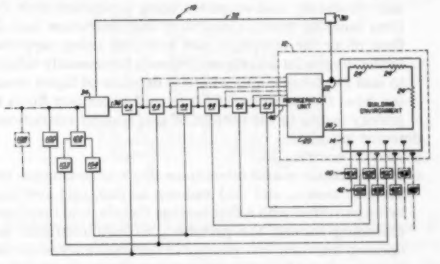
a conduit pipe and working fluid tubing in working cooperation between a compressor volume defined as the volume surrounded by the face of the piston and the surrounding inner walls of the cylinder and said cold finger generator in which said compressor housing surrounds said crankshaft, piston and cylinder, and piston and cylinder air bearing and guide means and the inner volume of said compressor housing is charged with said low molecular weight working fluid to an elevated pressure above atmospheric to provide a more efficient average pressure for said cyrogenic cooling system.

4,248,051

SYSTEM AND METHOD FOR CONTROLLING AIR CONDITIONING SYSTEMS

Jon J. Darcy, 125 Lexington Ave., Westwood, N.J. 07675; Richard A. Angerame, 23 Downing Pl., Harrington Park, N.J. 07640, and Aaron R. Kramer, 15 Sutton Rd., Monsey, N.Y. 10952

Filed Oct. 29, 1979, Ser. No. 89,587
Int. Cl.[3] G05B *13/00*; F25B *1/00*
U.S. Cl. 62—115 **23 Claims**



1. A control system for a refrigeration unit of an air conditioning system operating in connection with a given building environment so as to establish conditions providing a desired comfort level within the building environment, the refrigeration unit and the building environment each having predetermined dynamic characteristics, said control system comprising:

energy input control means for controlling the energy supplied to the refrigeration unit;

first detector means for detecting the output of the refrigeration unit and providing a first signal indicative of the output;

first compensating means responsive to the first signal for providing a control signal compensated for the predetermined dynamic characteristics of the refrigeration unit;

second detector means for detecting a change in at least one condition indicative of a change in the conditions affecting the comfort level within the building environment and providing a second signal; and

second compensating means responsive to the control signal and to the second signal for providing a further control signal to the energy input control means, the further control signal being compensated for the predetermined dynamic characteristics of the building environment, such

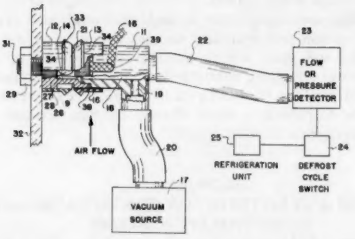
that said further control signal will anticipate further change in the conditions within the building environment and will operate the energy input control means to counter the anticipated further change and tend to maintain the desired comfort level.

4,248,052

FLOW SENSOR AND DEFROST SYSTEM INCLUDING SAME

Jon H. Bechtel, Holland, Mich., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Nov. 3, 1978, Ser. No. 957,590
Int. Cl.[3] F25D *21/02*; G08B *19/02*
U.S. Cl. 62—140 **2 Claims**



1. In a frost sensor for a forced air refrigeration unit including means for creating an air stream adjacent an evaporator unit of said refrigeration unit the improvement comprising:

a cylindrical restrictor having an annular restriction therein adapted for mounting adjacent said evaporator unit and in said air stream, said restrictor being positioned such that frost build-up thereon obstructs said restriction and the flow of air therethrough, said restrictor being supported so the longitudal axis thereof extends horizontally relative to said evaporator unit whereby droplets of liquid resulting from the melting of frost in said restriction flows by gravity in and to the bottom of said annular restriction;

detector means;

a vacuum source;

common conduit means interconnecting said restriction, said detector means, and said vacuum source, said restrictor being provided with a first passage therein, said restriction extending around the periphery of said restrictor and opening into said first passage in said restrictor, said vacuum source and said detector means being connected to said first passage by means of second and third passages respectively, said detector means detecting changes in the vacuum level in said common conduit caused by frost build-up in said restriction obstructing the flow of air therethrough; and

control means responsive to said detector means for initiating a defrost cycle when said air pressure in said common conduit reaches a selected value.

4,248,053

DUAL CAPACITY COMPRESSOR WITH REVERSIBLE MOTOR AND CONTROLS ARRANGEMENT THEREFOR

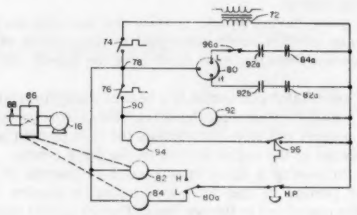
Francis J. Sisk, Washington Township, Fayette County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 873,291, Jan. 30, 1978, abandoned. This application Mar. 5, 1979, Ser. No. 17,665
Int. Cl.[3] F04B *49/10*; H02P *1/00*; G05D *23/32*
U.S. Cl. 62—158 **10 Claims**

1. In combination:

an electric motor driven dual capacity single refrigerant compressor which has a lower and a higher capacity automatically effected in accordance with the operating condition of the compressor; and

a control system for controlling said operating condition of said compressor in accordance with temperature conditions, said control system including control means for effecting operation of the compressor in a low capacity condition in response to one range of temperature change needed to satisfy the served space temperature demand, and in high capacity condition in response to a greater range of temperature change needed to satisfy said demand, means delaying a restart of said compressor motor



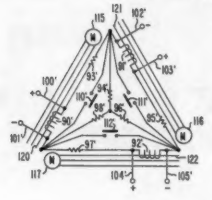
for at least a predetermined time in response to a condition of said control means operative to initiate a change in operating condition of said compressor when it restarts, and ambient temperature responsive means operative, in response to ambient temperature differing from the served spaced demand temperature by at least a predetermined degree, to prevent shifting of operation of said compressor from the high capacity condition to the low capacity condition.

4,248,054

REFRIGERATION SYSTEM WITH LOAD BALANCING CONTROL FOR AT LEAST THREE CENTRIFUGAL COMPRESSORS

Thomas E. Watson, and Watson L. Courtney, both of Staunton, Va., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 14, 1979, Ser. No. 11,987
Int. Cl.[3] F04B *41/06*; F25B *7/00*
U.S. Cl. 62—175 **3 Claims**



1. In a refrigerant system in which a refrigerant load is served by at least four electric motor-driven centrifugal gas compressors which have individually movable capacity control means controlled to operate in a decrease capacity direction by voltage signals above a given level derived from current transformer secondaries responsive to electric motor current in lines to the respective compressors, to thus balance the loads on the compressors, an improved circuit arrangement comprising:

one of said current transformer secondaries associated with a line to each said motor and a load resistor in series with said secondary to form a leg of a circuit;

a shorting switch connected across each secondary and its said load resistor;

each said leg of the circuit being connected to the other legs to form a ring circuit in a four or more compressor system;

a balancing resistance network including a balancing resistance for each leg, said balancing resistances being con-

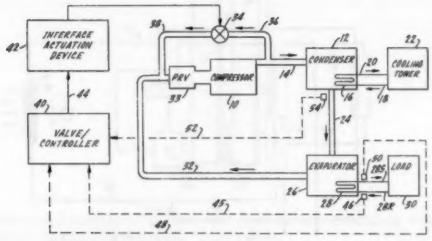
nected in a star circuit with said ring circuit in a four or more compressor system.

4,248,055

HOT GAS BYPASS CONTROL FOR CENTRIFUGAL LIQUID CHILLERS

Arthur D. Day, III, Mechanicsburg, and Harold B. Ginder, York, both of Pa., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Jan. 15, 1979, Ser. No. 3,316
Int. Cl.³ F25B *41/00*; F25D *17/02*
U.S. Cl. 62—196 C **10 Claims**



1. A control system for a hot gas bypass valve in a refrigeration system including a centrifugal compressor, a condenser, and an evaporator through which chilled liquid is circultated, said control system comprising:

means for sensing the temperature of the chilled liquid entering the evaporator;

means for sensing the temperature of the chilled liquid leaving the evaporator;

means for sensing the temperature of the liquid refrigerant at the outlet of the condenser; and

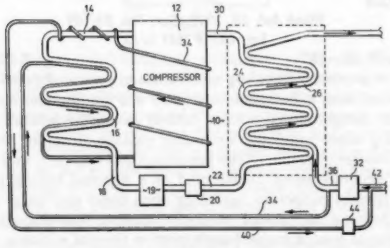
means responsive to the combination of the difference between the temperature of the chilled liquid entering the evaporator and the temperature of the chilled liquid leaving the evaporator with the temperature of the liquid refrigerant at the outlet of the condenser and adapted for automatically controlling the operation of a hot gas bypass valve so as to avoid surging of the compressor.

4,248,056

HEAT RECLAIMER FOR A HEAT PUMP

William H. Beacham, Putnam, Canada, assignor to 379235 Ontario Ltd., Putnam, Canada

Filed May 11, 1979, Ser. No. 38,126
Int. Cl.³ F25B *27/02, 13/00*
U.S. Cl. 62—238 E **1 Claim**



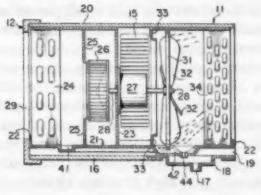
1. A heat reclaiming device for the recovery of waste heat in the region of the compressor of a heat pump installation comprising a refrigerant compressor housed in a cover shell, refrigerant condenser, refrigerant evaporator, an expansion valve, and a receiver and conduit connecting said compressor, condenser, expansion valve, evaporator, and receiver in operating relationship, said installation having a second heat transfer coil in good heat transfer relationship with said evaporator, said second heat transfer coil having a heat transfer fluid circulating through a secondary circuit comprising a heat source and said second coil, said heat transfer fluid being propelled by pump means, heat reclaiming conduit means connected into said secondary circuit in such manner as to circulate heat transfer fluid therethrough, said heat reclaiming conduit being in good heat transfer relationship with the shell of said compressor, said heat transfer fluid circulating in said heat reclaiming circuit capturing heat given off by the operation of said compressor, said heat reclaiming conduit means connected into said secondary circuit so as to return heat transfer fluid heated by said compressor to said second heat transfer coil.

4,248,057

AIR CONDITIONER

Shoji Yaguchi, Kawasaki, Japan, assignor to The General Corporation, Kawasaki, Japan

Filed Aug. 23, 1978, Ser. No. 935,918
Claims priority, application Japan, Aug. 26, 1977, 52/102434
Int. Cl.³ F25B *47/00, 39/04*
U.S. Cl. 62—280 **7 Claims**



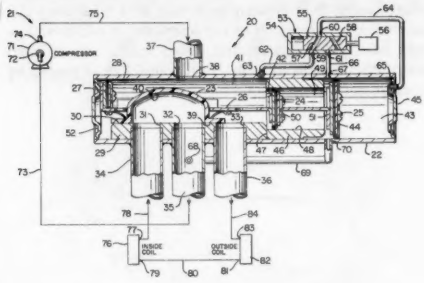
1. In an air conditioner including a bottomplate member, an indoor heat exchanger disposed on the bottomplate member in an indoor space, an outdoor heat exchanger disposed on the bottomplate member in an outdoor space, a propeller fan disposed within the outdoor space and rotatable about a horizontal axis for directing external air through the outdoor heat exchanger to the outdoors, said fan being positioned upstream from the outdoor heat exchanger so that during rotation of the fan the region between the fan and the outdoor heat exchanger increases in wind pressure as compared to the remaining portion of the outdoor space, and a slinger ring mounted on the propeller fan, the bottomplate member being formed to conduct a condensate formed on one of the heat exchangers to an area below the propeller fan; the improvement which comprises means defining a drain port in the bottomplate member positioned below the high pressure region between the fan and the outdoor heat exchanger and positioned at a region located on the side of a vertical plane passing through the horizontal axis that is advanced as viewed in the direction of rotation of the propeller fan and which is subjected to tangential wind pressure from the end of the blades of the propeller fan whereby the condensate conducted to said area below the propeller fan is directed toward the outdoor heat exchanger by means of the slinger ring during the rotation of the propeller fan and is discharged to the outside through the drain port when the propeller fan remains at rest.

4,248,058

DIFFERENTIAL PISTON TYPE REVERSING VALVE CONSTRUCTION, SYSTEM UTILIZING THE SAME AND METHOD OF MAKING

Werner R. Bauer, Richmond, Va., and James T. Candor, Washington Township, Montgomery County, Ohio, assignors to Robertshaw Controls Company, Richmond, Va.

Filed Apr. 4, 1979, Ser. No. 27,007
Int. Cl.[3] F25B *13/00*; E03B *3/00*
U.S. Cl. 62—324 A **40 Claims**



1. In a differential piston type reversing valve construction having a housing body provided with a high pressure chamber that has a valve member slideable therein for selectively interconnecting said high pressure chamber to either port of a pair of ports interrupting a valve seat of said housing body while interconnecting a low pressure port of said valve seat to the other port of said pair of ports, said valve member having a small piston member and a large piston member interconnected thereto and being spaced from each other to define an intermediate chamber therebetween, said small piston member having one side thereof exposed to said high pressure chamber and said large piston member having one side thereof exposed to a control chamber of said housing body, the improvement comprising means of said valve construction for effectively interconnecting said high pressure chamber to said intermediate chamber and said low pressure port to said control chamber to cause said valve member to slide to one position thereof in said high pressure chamber, said means also being adapted to effectively interconnect said high pressure chamber to said control chamber and said low pressure port to said intermediate chamber to cause said valve member to slide to another position thereof in said high pressure chamber, said construction having means for effectively disconnecting said low pressure port from said intermediate chamber while maintaining the interconnection between said high pressure chamber and said control chamber when said valve member is moved to said other position thereof.

4,248,059

REVERSIBLE-CYCLE CLOSED-CIRCUIT REFRIGERATION SYSTEMS

Roy P. Dearling, Worcester Park, England, assignor to Kenneth Fowler and Edward Glover, both of, England

Filed Oct. 26, 1978, Ser. No. 954,755
Claims priority, application United Kingdom, Oct. 29, 1977, 45162/77
Int. Cl.[3] F25B *13/00, 27/02*
U.S. Cl. 62—324 D **6 Claims**

1. A reversible cycle unit for air conditioning a room in heating and cooling cycles, the unit receiving water as a heat source and as a heat sink and comprising:

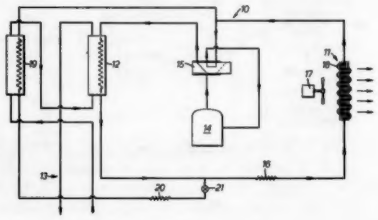
a room heat exchanger for location in a room to heat or cool the room by the respective condensation or evaporation by air in the room of a refrigerant passing through the room heat exchanger,

a first water heat exchanger connected in a closed refrigerant conveying circuit with the room heat exchanger and also recieving water for heat exchange with the refrigerant to condense the refrigerant in the cooling cycle and to evaporate the refrigerant in the heating cycle,

a compressor arranged in the refrigerant circuit in the path of the refrigerant from the room heat exchanger to the first water heat exchanger, in the cooling cycle, and for driving the refrigerant around the circuit and heating the refrigerant during compression,

reversing valve means associated with the compressor for reversing the direction of flow of the refrigerant around the circuit to change the heating system from the cooling cycle to the heating cycle,

expansion means arranged before the room heat exchanger in the path of the refrigerant from the first water heat



exchanger to the room heat exchanger, in the cooling cycle,

a second water heat exchanger connected in the refrigerant circuit in the path of the refrigerant from the compressor to the first water heat exchanger, in the heating cycle, and, in the heating cycle, for receiving the water for heat exchange with the refrigerant to condense the refrigerant and to heat the water,

a water outlet to the second water heat exchanger, and

a water inlet to the first water heat exchanger connected to the water outlet of the second water heat exchanger whereby, in the heating cycle, heat extracted from the refrigerant in the second water heat exchanger and transferred to the water to heat the water, is passed to the first water heat exchanger to evaporate the refrigerant.

4,248,060

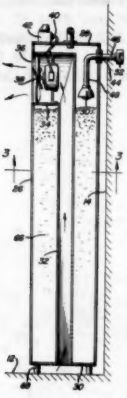
CO_2 CHARGED COOLING UNIT

Paul R. Franklin, Jr., 5211 W. Beaver St., Jacksonville, Fla. 32205

Filed Jul. 23, 1979, Ser. No. 59,769
Int. Cl.[3] F25D *3/12*
U.S. Cl. 62—387 **8 Claims**

1. A precharged cooling unit for use in a normally enclosed insulated area to be maintained cool, said cooling unit including an upright closed bottom cabinet having peripherally extending sides, vertically extending passage structure within said cabinet inwardly of the peripheral sides thereof, said passage structure being constructed of a material having good heat transfer properties, including open upper and lower ends and defining an internal passage extending therethrough including at least a major length portion thereof which is substantially vertically straight and constant in cross-sectional area for minimal restriction to the passage of air therethrough, blower means operatively associated with said passage structure for pumping air therethrough, and charging means for admitting CO_2 "snow" into the upper portion of said cabinet

outwardly of said passage structure for gravity falling of "snow" within said cabinet toward the closed bottom thereof



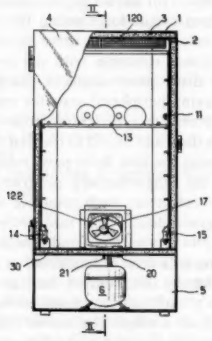
about said passage structure, said peripherally extending sides being slightly downwardly convergent.

4,248,061

THERMOSTATICALLY AND HYGROSTATICALLY CONTROLLED CABINET FOR STORING FOODSTUFFS AND OTHER PARTICULARLY DELICATE PRODUCTS

Alain Rousseau, Paris, and Francois Ramel, Levallois, both of France, assignors to Effa Etudes, France

Filed May 21, 1979, Ser. No. 41,129
Int. Cl.³ F25D *17/06*
U.S. Cl. 62—419 **7 Claims**



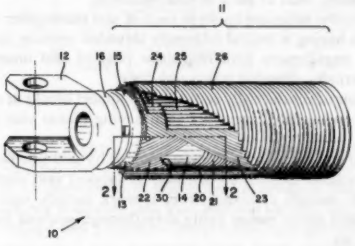
1. Storage cabinet including: a chamber having a thermally-insulating outer wall and an inner partition which, with said wall, defines an elongated space at least partly surrounding a usable inner space; means of storing products in said usable space; a window formed in a first portion of said partition; a plurality of apertures formed in a second portion of said partition, the second portion being at a distance from the first; a fan, cooperating with said window to establish forced air circulation inside said elongated space, through said apertures and inside said usable space, following a closed circuit going through said window; a refrigerating unit, including an evaporator situated inside said elongated space and operating at a pre-determined temperature exceeding 0° C., said refrigerating unit moreover including a compressor and a condenser positioned outside said chamber; thermal regulation means, cooperating with said refrigerating unit, and starting or cutting off the compressor for regulating, around a rated value exceeding said pre-determined temperature, the temperature inside said elongated space, on a portion of said closed circuit situated downstream of said evaporator, said regulation means including a timing component set to start said fan at the end of a pre-determined time after start-up of the compressor.

4,248,062

DRIVE SHAFT ASSEMBLY AND METHOD FOR MAKING SAME

Philippe H. McLain, Gilbert; Robert J. Shrontz, and Dominick Tringali, both of Columbia, all of S.C., assignors to Shakespeare Company, Columbia, S.C.

Filed Oct. 5, 1979, Ser. No. 82,006
Int. Cl.³ F16C *1/00*; F32B *1/08*
U.S. Cl. 64—1 S **22 Claims**



1. A drive shaft assembly comprising:

a tubular, fiber-reinforced plastic shaft portion having layers of oppositely angled resin-impregnated helical fibers at 25°–65° to the longitudinal shaft axis and at least one layer having substantially longitudinal fibers forming a laminate,

at least one layer of said laminate having an interior bonding surface,

a metallic sleeve received within at least one end of said laminate and having an exterior bonding surface bonded to said interior bonding surface;

said shaft portion having an inner spiral layer of closely wound fibers at 80°–90° to the longitudinal shaft axis, said layer terminating at the inner edge of said sleeve;

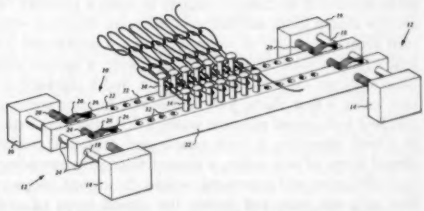
whereby said layer of longitudinal fibers provides flexural rigidity to the laminate, said oppositely angled layers provide torsional strength while allowing radial contraction thereof to grip the sleeve, and said inner spiral layer provides additional hoop strength to the laminate.

4,248,063

MANUAL KNITTING APPARATUS

Kai Wang, 233 Sundown Trail, Williamsville, N.Y. 14221

Filed Apr. 4, 1979, Ser. No. 26,901
Int. Cl.³ B04B *3/00*
U.S. Cl. 66—4 **4 Claims**



1. A manual knitting frame, comprising;

(a) two pairs of longitudinal extending elongated substan-

tially rectangular members in spaced parallel relation to one another,

(b) each of said members having planar upper surfaces containing a plurality openings therein,

(c) a plurality of knitting pegs removably inserted in a predetermined member of said openings depending upon the type and shape of fabric to be knitted,

(d) each of said members having planar side faces perpendicular to said upper surfaces,

(e) a pair of through openings in each of said side faces at opposite ends of said members,

(f) a pair of transverse rods passing through said through openings at each end of said members with the innermost rod of each pair having exterior threads,

(g) rectangular openings in each of said upper surfaces at opposite ends of each of said members,

(h) circular adjusting knobs in each of said rectangular openings having a central internally threaded opening in mating engagement with respective ones of said innermost externally threaded transverse rods,

(i) a pair of substantially rectangular support blocks at opposite ends of said members each having planar side faces, and

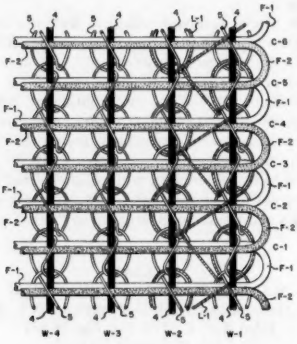
(j) said transverse rods being supported by said side faces at a location thereon so oriented to support said members with enough clearance from a work surface such that knitted fabric passes easily therethrough without bunching up.

4,248,064

LOCK-STITCH KNITTED ELASTIC FABRIC

Carl J. Odham, Asheboro, N.C., assignor to Stedman Corporation, Asheboro, N.C.

Filed Feb. 14, 1979, Ser. No. 12,024
Int. Cl.[3] D04B *23/08*
U.S. Cl. 66—192 **11 Claims**



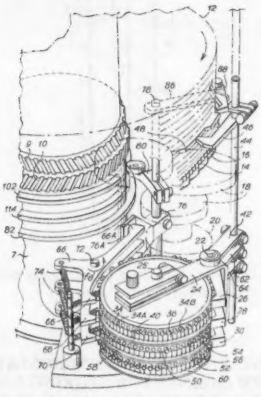
1. An elastic warp knit fabric comprising a plurality of base yarns knitted in successive courses to form a plurality of successive closed loops extending in the warp direction which in turn form a plurality of wales including a lateral end wale, a first adjacent wale adjacent said end wale, a second adjacent wale adjacent said first adjacent wale, and a plurality of interior wales; a first elastic yarn laid in said interior wales and in said first and second adjacent wales; a first filler yarn extending in a weft direction in each course and contained within the closed loops of said wales; a second filler yarn extending in a weft direction and contained within the closed loops of the first adjacent wale and within the closed loops of said end wale; and a first locking yarn knitted to form an open loop in alternate courses of said end wale and to form a closed loop in alternate courses of said first adjacent wale.

4,248,065

PROGRAMMING DEVICE FOR CIRCULAR STOCKING KNITTING MACHINES AND THE LIKE

Fabrizio Micheletti, Fucecchio, Italy, assignor to Brematex S.p.A, Prato, Italy

Continuation of Ser. No. 829,247, Aug. 30, 1977, abandoned. This application Sep. 11, 1978, Ser. No. 941,204
Int. Cl.[3] D04B *15/00*
U.S. Cl. 66—237 **2 Claims**



1. A circular knitting machine comprising a rotatable needle cylinder, and a programming device for controlling the operation of the machine, said programming device including a program drum, means for advancing the drum comprising first drive ratchet-wheel means for rotating the drum, first drive pawl means for rotating the first drive ratchet-wheel means, and drive cam means rotatable with the needle cylinder to actuate the first drive pawl means, a plurality of rotatable program discs having peripheral seats for removable pins for determining supplementary programs, followers co-operable with the program discs and linked to the first drive pawl means to selectively render the first drive pawl means inoperative in dependence on the supplementary programs, a plurality of crown ratchet-wheel means each rotatable with a respective one of the program discs, each said crown ratchet-wheel means having a plurality of teeth and a region without teeth and corresponding to a zero setting position of the associated program disc, whereby the program disc can stop in said zero setting position, a plurality of crown ratchet-wheel pawl means each associated with a respective one of the crown ratchet-wheel means to rotate the crown ratchet-wheel means, drive means rotatable with the needle cylinder for actuating the crown ratchet-wheel pawl means, selector means for causing the crown ratchet-wheel pawl means to drive the crown ratchet-wheel means, the selector means comprising a plurality of cam discs, each associated with a respective one of the crown ratchet-wheel means and being idly mounted with respect thereto, a recess in each cam disc which, when aligned in correspondence with the said tooth free region of its respective crown ratchet-wheel means permits the respective crown ratchet-wheel pawl means associated therewith to start driving the crown ratchet-wheet means, a cam track on the program drum, and cam follower means associated with the cam track to cause the respective cam discs to rotate such that the recesses of the cam discs move into alignment with the tooth free regions of their respectively associated crown ratchet-wheel means.

4,248,066

APPARATUS FOR THE CONTINUOUS WET TREATMENT OF STRAND-LIKE TEXTILE MATERIALS

Hermann Müller, Herisau, Switzerland, assignor to Aktiengesellschaft Cilander, Herisau, Switzerland

Filed Apr. 25, 1979, Ser. No. 33,216

Claims priority, application Fed. Rep. of Germany, May 10, 1978, 2820471

Int. Cl.³ D06B *3/02*

U.S. Cl. 68—43 **2 Claims**

1. An apparatus for the continuous wet treatment of strand-like textile material, comprising:

a pipe system through which the textile material moves in a predetermined direction;

means for infeeding treatment liquid moving in countercurrent with respect to the predetermined direction of movement of the textile material for contact with the textile material;

at least one squeezing means provided for the pipe system for squeezing the textile material which is contacted by the treatment liquid;

an auxiliary line having an upper end and a lower end;

the upper end of said auxiliary line being arranged at the region of the squeezing means;

the lower end of the auxiliary line opening into the pipe system through which travels the textile material to be treated;

said pipe system comprising an essentially vertically extending pipe;

said squeezing means comprising at least one pair of coacting squeeze rolls between which there is passed the textile material; and

said auxiliary line having a starting portion located below the squeeze rolls.

4,248,067

DEVICE LOCK ALLOWING ROTATION

Hartley M. Sears, Costa Mesa, Calif., assignor to Schick Laboratories, Inc., Los Angeles, Calif.

Filed Jan. 31, 1979, Ser. No. 7,977

Int. Cl.³ E05B *73/00*

U.S. Cl. 70—58 **3 Claims**

1. A locking apparatus for use in removably attaching an object having an outer shell to a specified place on a surface, said object containing a lock cylinder opposite the desired point of attachment, said lock cylinder having an extension from it into the interior of said object, said extension able to be moved into a lock position and an unlock position, comprising:

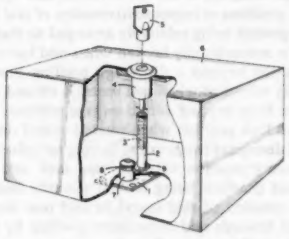
a hole through said outer shell at the desired point of attachment of said object to said surface;

surface securing means, fastened to said surface at said specified place, having an engagable protrusion from said surface of generally cylindrical shape and able to be inserted into the interior of said object through said hole;

engagement means, connectable to said extension and rotatable in cooperation with said extension between a lock position and an unlock position, for engaging said surface securing means when said engagement means is moved to said lock position while said protrusion is inserted in said hole, and for permitting the rotational engagement of said object around said protrusion;

wherein said protrusion is able to be securely fastened to said surface in a position normal to said surface, and has a groove about its circumference near the axial end opposite said surface; and

wherein said engagement means comprises a generally circular flange with a section removed, said section formed by a cut parallel to the axis of said flange, said flange rotatable in cooperation with said extension between said lock and unlock positions, said lock position causing said flange to engage said protrusion by entering said groove, thereby preventing said protrusion from being withdrawn from said hole, said unlock position causing said flange to not engage said protrusion due to said removed section, thereby permitting the removal of said object from said surface.



4,248,068

DEADLOCKING MECHANISM

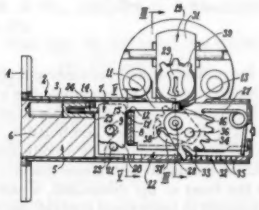
Hans J. Esser, Keysborough, and Gerald F. Dunphy, Glen Waverley, both of Australia, assignors to Ogden Industries Pty. Limited, Victoria, Australia

Filed Oct. 26, 1978, Ser. No. 954,986

Claims priority, application Australia, Oct. 27, 1977, PD2214

Int. Cl.³ E05B *65/06, 11/00*

U.S. Cl. 70—134 **6 Claims**



1. Deadlocking mechanism including; a tubular casing securable to a support; a deadbolt slidably mounted within said casing for relative movement between an operative position in which a head portion thereof projects out of said casing, and an inoperative position in which said head portion is substantially contained within said casing; actuator means mounted on said casing and including a lock barrel which is located externally of said casing and is rotatable relative thereto towards and away from a lock position; a gear segment connected directly to said lock barrel for rotation therewith; a rack and pinion assembly located within said casing; said rack being movable lengthwise of said casing in response to rotation of said pinion, means connecting said rack to said deadbolt for movement therewith; lost motion means forming part of said connecting

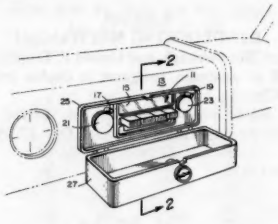
means and permitting limited relative movement between said rack and said deadbolt; a deadlocking member located within said casing and being operative to releasably hold said deadbolt in said operative position; said deadlocking member being responsive to said limited relative movement between said rack and deadbolt to release said deadbolt for movement into said inoperative position, and a gear segment connected to said pinion within said casing for rotation with said pinion and being engagable with said barrel gear segment through an opening in wall of said casing to form a drive connection whereby said deadbolt is moved between said operative and inoperative positions in response to rotation of said barrel; said two gear segments being relatively arranged so that said drive connection is automatically broken when said barrel is rotated in one direction beyond a disengage position thereof and is automatically reformed when said barrel is rotated in an opposite direction from beyond said disengage position; said barrel adopting said lock position when rotated in said one direction beyond said disengage position and having no influence on said deadbolt during rotation between said lock and disengage positions; said deadbolt being moved towards said operative position by rotation of said barrel in said one direction and being moved towards said inoperative position by rotation of said barrel in said opposite direction, said operative position corresponding to said disengage position of said barrel.

4,248,069

APPARATUS FOR PROTECTING AND PREVENTING THEFT OF IN-DASHBOARD MOUNTED RADIOS AND THE LIKE

Fred H. Burbank, 770 Welch Rd.-Suite 335, Palo Alto, Calif. 94304

Filed Nov. 1, 1978, Ser. No. 956,594
Int. Cl.³ B65D *55/14*
U.S. Cl. 70—160 **4 Claims**



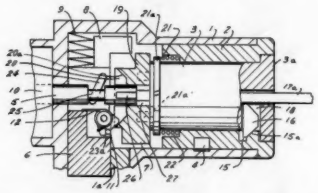
1. Apparatus for protecting and preventing theft of a radio instrument and the like adapted to be mounted in a dashboard; said dashboard having a relatively accessible front side and a relatively inaccessible back side, the combination comprising: an instrument to be protected including a body adapted to be positioned in back of the dashboard, a nose portion adapted to be visable from the front of the dashboard, a pair of hollow threaded shafts adapted to also extend through said dashboard, a pair of instrument control shafts extending through said hollow threaded shafts, a pair of nuts carried by said hollow threaded shafts on the front side of said dashboard for releasably drawing said body tightly against the back side of said dashboard, and control knobs attached to said control shafts; and protection means including a back plate defining an opening corresponding in size and position to said nose piece and a pair of apertures corresponding in size and position to said pair of hollow threaded shafts, said back plate being adapted to be secured between the front of said dashboard and said nuts whereby said back plate is retained in position by the same threaded hollow shafts and nuts as retain said instrument in position, cover means attached to said back plate for selectively enclosing and exposing said nose portion, said nuts, and said control knobs and means for locking cover means to said back plate in its position enclosing said nose portion, said nuts and said control knobs.

4,248,070

STEERING COLUMN AND IGNITION LOCK FOR MOTOR VEHICLE

Rudolf Eichenauer, Hollbergstrasse 1, D-6000 Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 2, 1978, Ser. No. 947,534
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1977, 2757544
Int. Cl.³ B60R *25/02*
U.S. Cl. 70—252 **4 Claims**



1. In a lock arrangement for a motor vehicle having a steering column, which comprises

(a) a housing defining an axial bore and a cross bore intersecting therewith,

(b) a key controlled lock cylinder mounted in the axial bore of the housing for rotation about the axis of the bore into selected operating positions, the key being insertable into the lock cylinder for rotation of the lock cylinder and withdrawable therefrom, the lock cylinder including

(1) an axially extending driver element projecting inwardly from the lock cylinder,

(c) an electrical ignition circuit means for starting the motor of the vehicle, the driver element extending into operative association with the ignition circuit means and being arranged to operate the circuit means on rotation of the lock cylinder into a selected one of the operating positions,

(d) a lock bolt mounted in a cross bore for displacement between a retracted position and a locking position upon withdrawal of the key from the lock cylinder,

(e) an operating spring biasing the lock bolt into the locking position,

(1) the lock cylinder including a cam means for moving the lock bolt against the bias of the operating spring into the retracted position on rotation of the lock cylinder into another one of the selected operating positions, and

(f) latch means for holding the lock bolt in the retracted position until the key has been withdrawn from the lock cylinder,

(g) the improvement of the axially extending driver element being keyed to the lock cylinder for rotation therewith and being axially displaceable with respect to the lock cylinder, and further including a control means arranged on the lock bolt for displacing the driver element axially upon movement of the lock bolt between the retracted and locking positions.

4,248,071

SEPARABLE HOLDER

Mel Kussoy, 104-20 Queens Blvd., Forest Hills, N.Y. 11375

Filed Apr. 20, 1979, Ser. No. 31,864
Int. Cl.³ A47G *29/10*
U.S. Cl. 70—456 R **7 Claims**

1. A separable holder comprising:

a plastic central portion having a body portion and having first and second threaded projections extending from opposite ends of said body portion, said body portion also having annular shoulders at opposite ends thereof;

first and second end portions, each having an internally threaded longitudinal opening and an annular end wall surrounding said opening, said first and second threaded projections for being removably screwed into said corresponding internally threaded openings of said first and second end portions, said annular shoulders of said body

abutting corresponding annular end walls of said first and second end portions, each of said first and second end portions having transverse holes therethrough; and

first and second split ring elements inserted in said corresponding transverse holes of said first and second end portions, said ring elements for having hole-bearing elements inserted thereon.

4,248,072

METHOD OF AND APPARATUS FOR PRODUCING PLATE MATERIAL HAVING UNIFORM WIDTH AND LENGTHWISE THICKNESS VARIATION

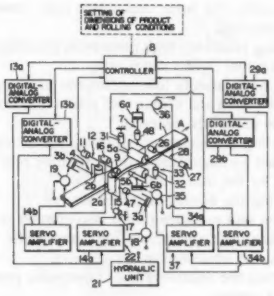
Yoshimichi Hasegawa, Nagoya, and Osamu Furuta, Tokai, both of Japan, assignors to Aichi Steel Works, Limited, Japan

Filed Jul. 19, 1979, Ser. No. 58,892

Claims priority, application Japan, Jul. 25, 1978, 53/90805; Oct. 13, 1978, 53/126320; Nov. 2, 1978, 53/135503; Nov. 4, 1978, 53/136047; Nov. 18, 1978, 53/142653; Dec. 23, 1978, 53/161368

Int. Cl.³ B21B *37/14, 37/00*

U.S. Cl. 72—8 **21 Claims**



1. A method of producing a plate material having a uniform width and lengthwise thickness variation by imparting plastic deformations to a work by means of widthwise rolling and thicknesswise rolling rolls comprising the steps of: measuring the travelling amount of said work at the outlet of said widthwise rolling roll and at the outlet of said thicknesswise rolling rolls; changing continuously the roll gap between said widthwise rolling rolls through controlling the position of at least one of said widthwise rolling rolls in accordance with the measured amount of said work and in accordance with a previously set dimension of product and rolling condition, so as to reduce the width of said work at such portions of the latter as will be laterally spread to increase the width by a subsequent rolling by said thicknesswise rolling rolls; and changing the roll gap between said thicknesswise rolling rolls through controlling the position of at least one of said thicknesswise rolling rolls in accordance with the measured travelling amount of said work and in accordance with a previously set dimension of product and rolling condition, thereby to change the thickness of the work.

4,248,073

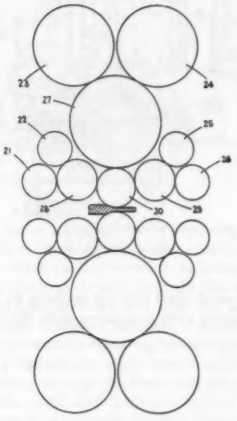
CLUSTER TYPE COLD ROLLING MILL

Robert C. Verbickas, Wolcott, and John W. Turley, Oxford, both of Conn., assignors to T. Sendzimir, Inc., Waterbury, Conn.

Continuation-in-part of Ser. No. 880,601, Feb. 23, 1978, abandoned. This application Jan. 26, 1979, Ser. No. 6,804

Int. Cl.² B21B *13/14, 29/00, 31/16*

U.S. Cl. 72—243 **6 Claims**



1. A cluster rolling mill consisting of a pair of work rolls, each of said work rolls being supported by three intermediate rolls, each of said intermediate rolls being supported by two backing roller assemblies, said backing roller assemblies being suitably mounted in a stationary support structure, so that all rolls are fully supported along their length in vertical and horizontal planes.

4,248,074

AXIAL ROLL ADJUSTMENT FOR A ROLLING MILL

Wilhelm Fuhrmann, Wexford, and Andrew J. Sofranko, Pittsburgh, both of Pa., assignors to Schloemann-Siemag, Inc., Pittsburgh, Pa.

Filed Apr. 20, 1979, Ser. No. 31,888

Int. Cl.³ B21B *31/18*

U.S. Cl. 72—247 **9 Claims**

1. Apparatus to axially position one of a pair of rolls each having a bearing journal at opposite ends of a roll body for rotatable support by bearings carried by chocks within one of the windows of a pair of spaced-apart mill housings, said apparatus including the combination of:

chock extension means including a threaded surface extending from one of said chocks outwardly from the window of the housing supported thereby,

first and second nut members each having threads for engaging the threaded surface of said chock extension means,

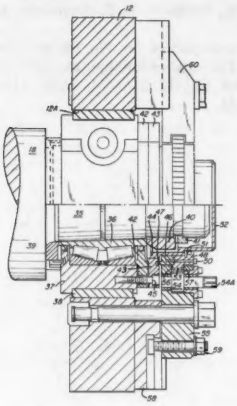
a pin member interlocking said first and second nut members for simultaneous rotation thereof while threadedly abutted together under sufficient torque to stress the threaded surface of said chock extension means with the threads of the nut members,

gear means supported by one of said first and second nut members,

a pinion gear having teeth to mesh with said gear means, and

keeper block means carrying said pinion gear to mesh with said gear means while supported by one of said mill housings to simultaneously rotate said first and second nut members for threadedly displacing said chock extension

means and chock together with the roll supported thereby in an axial direction of the roll, said keeper block means



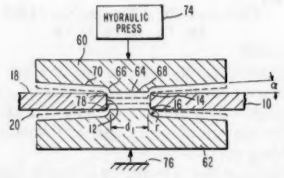
including spaced-apart bearing surfaces to hold said nut members against axial movement with the roll.

4,248,075

METHOD OF FORMING APERTURE WITH ROUNDED EDGES IN SHEET MATERIAL

George J. Whitley, Philadelphia, Pa., assignor to RCA Corporation, New York, N.Y.

Filed May 4, 1979, Ser. No. 36,189
Int. Cl.[3] B21D *28/26, 37/10*
U.S. Cl. 72—335 6 Claims



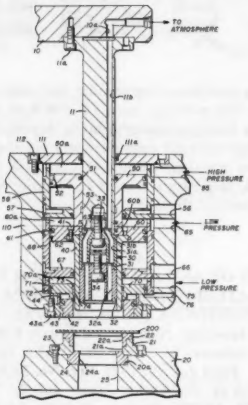
1. A method of forming a hole in a sheet of steel comprising:
forming an aperture of a given transverse dimension in the sheet, and
rounding the surface of said aperture in a single continuous motion so that all the surface forms a continuous curve whose tangents gradually rotate in a given direction from the intersection of said aperture surface with one surface of the sheet to the intersection of the aperture surface with the other surface of said sheet on the opposite side of the sheet as the one surface, said surfaces being continuous and smooth with each other within the aperture and continuous and smooth with said surfaces of said sheet beyond said aperture such that the section of said sheet beyond said aperture decreases continuously at a gradually increasing rate.

4,248,076

TRIPLE ACTION CONTAINER DRAWING AND REDRAWING METHOD

Joseph D. Bulso, Jr., and William R. Lewers, both of Canton, Ohio, assignors to Redicon Corporation, Canton, Ohio

Division of Ser. No. 877,292, Feb. 13, 1978, Pat. No. 4,214,471.
This application Apr. 2, 1980, Ser. No. 136,414
Int. Cl.[3] B21D *22/28*
U.S. Cl. 72—349 3 Claims



1. A method of drawing and redrawing containers in a double acting press having inner and outer rams operating in relatively timed reciprocal fashion with the outer ram preceding the inner ram in the operating cycle comprising the steps of:
(A) advancing the inner and outer rams toward the container material;
(B) applying relatively high pneumatic pressure to a pressure piston carried by the outer ram;
(C) applying relatively low pneumatic pressure to a further pressure piston and urging said piston into holding contact with the container material;
(D) retarding movement of drawing means carried by the outer ram by engagement there with by redrawing means carried by the inner ram;
(E) blanking the container material;
(F) moving said pressure piston into contact with the drawing means under relatively high pneumatic pressure and drawing the container material;
(G) relieving the relatively high pneumatic pressure on said pressure piston;
(H) applying relatively low pneumatic pressure to the drawing means to hold the drawn container; and
(I) advancing the redrawing means to redraw the container.

4,248,077

JAW FOR RIVETER

Jack T. Gregory, P.O. Box 556, San Anselmo, Calif. 94960

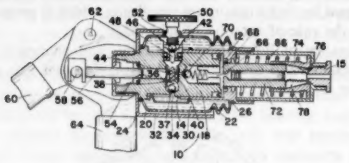
Filed Nov. 26, 1979, Ser. No. 97,376
Int. Cl.[3] B21J *15/34*
U.S. Cl. 72—391 4 Claims

1. In a hydraulic riveter including a cylinder with a piston slidable therein, a fluid reservoir, an inlet chamber, an inlet port between said reservoir and said inlet chamber, a transfer port between said inlet chamber and said cylinder, first and second one-way check valves in said inlet port and said transfer port, respectively, pump means for drawing fluid from said reservoir into said inlet chamber and forcing same from said inlet chamber to said cylinder, and jaw means for gripping the shank of a rivet as it is being pulled, said jaw means comprising:
an extension on one of said cylinder and piston;

an annular jaw holder on said extension having a conical inner surface converging toward one end thereof;

an annular array of gripping segments in said jaw holder having gripping elements on the inner surface thereof;

a bore in said extension;



a piston slidable in said bore and movable toward one end thereof to engage and bias said gripping segments; and

a pressure port in the other end thereof opening into communication with said cylinder.

4,248,078

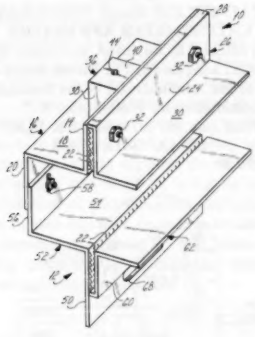
AUTOMOBILE BODY CLAMP

John F. Russo, 532 Stratford Rd., South Hempstead, N.Y. 11550

Filed Dec. 4, 1978, Ser. No. 966,296

Int. Cl.[3] **B21D** *1/12;* **B21J** *13/08*

U.S. Cl. 72—457 **3 Claims**



1. Device for repairing damaged automobile frame elements or the like, comprising means for simultaneously clamping a projecting portion of said frame element at opposite sides of such element, said clamping means comprising a pair of coacting spaced clamps, each of said clamps comprising a set of two jaws consisting of a first jaw member constituted by a vertical flange of a "z" section body having a horizontal web, a slotted projecting flange portion and a gripping face with teeth-like projections, and a second jaw member constituted by an intermediate vertical web of a "z" section body element having a horizontally disposed flange entending toward the vertical flange of the first jaw and a horizontally disposed flange extending from the opposite side of said vertical web, and means for securing the slotted projecting flange portions of the first jaw of each set of jaws in overlapping relationship with each other to maintain said clamps in spaced relation.

4,248,079

TRAM FOR USE IN AN APPARATUS FOR REPAIRING AND STRAIGHTENING

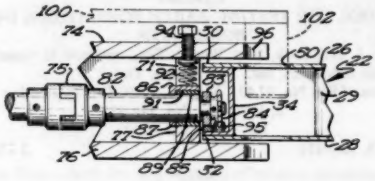
Gerald A. Specktor, 409 Cleveland Ave. S., St. Paul, Minn. 55105

Division of Ser. No. 496,848, Aug. 12, 1974, Pat. No. 4,151,737.

This application Apr. 23, 1979, Ser. No. 32,609

Int. Cl.[3] **B21D** *1/12*

U.S. Cl. 72—465 **24 Claims**



1. Tram for use in an apparatus for repairing and straightening the body and frame of a wheeled vehicle comprising, in combination: a tram carrier member including at least a first side wall and a second side wall; with the first side wall including a first U-shaped aperture and with the second side wall including a second U-shaped aperture; at least one shaft engaging with the apparatus for repairing and straightening, with the shaft extending through the tram carrier member and having a first end extending through the first U-shaped aperture formed in the first side wall and having a second end extending through the second U-shaped aperture formed in the second side wall; first shaft retainer slidably mounted to the first side wall for capturing the shaft within the first U-shaped aperture of the first side wall; second shaft retainer slidably mounted to the second side wall for capturing the shaft within the second U-shaped aperture of the second side wall; first means for biasing the first shaft retainer and allowing the shaft to deflect under a load condition; second means for biasing the second shaft retainer and allowing the shaft to deflect under a load condition; and means for receiving counterforces wherein under a load condition, the shaft deflects and thus is subjected only to the initial force while the means for receiving the counterforce receives the major counterforce.

4,248,080

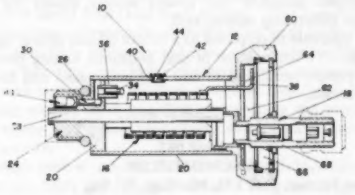
WHEEL-MOUNTING TIRE PRESSURE GAGE WITH FAILSAFE FEATURES

Ted Chuck, Glendora, Calif., assignor to HTL Industries, Inc., Arcadia, Calif.

Filed Nov. 19, 1979, Ser. No. 95,910

Int. Cl.[3] **G01L** *17/00;* **B60C** *23/04*

U.S. Cl. 73—146.8 **9 Claims**



1. In an aircraft tire pressure gage having a bourdon tube for sensing air pressure in the tire, a sealed case surrounding the bourdon tube, and a pressure port in said case for establishing a fluid communication path between said tube and said tire when the gage is in pressure measuring relation to the tire, the improvement comprising:

a pressure relief valve in said case for venting the latter to the

atmosphere when pressure in the case exceeds a predetermined valve,

said relief valve having means visible externally of the case for indicating whether or not the case has been vented; and

a flow-actuated valve in said port for occluding said fluid communication path when airflow from the tire to the tube exceeds a preselected rate, whereby to preclude venting of the tire through the case should the tube rupture or otherwise develop a fast leak into the case.

4,248,081

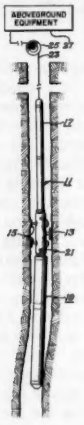
TOOL FOR TESTING EARTH FORMATIONS IN BOREHOLES

Bobby J. Hailmark, Fort Worth, Tex., assignor to Gearhart-Owen Industries, Inc., Fort Worth, Tex.

Division of Ser. No. 42,431, May 25, 1979. This application May 5, 1980, Ser. No. 146,681

Int. Cl.³ E21B *49/00*

U.S. Cl. 73—151 **3 Claims**



1. A tool for testing earth formations in boreholes, comprising:

formation isolation means including hydraulically controlled extendable and retractable seal pad means and backup pad means;

first electrically powered means controllable at aboveground equipment for generating and applying hydraulic setting pressure to extend and set said seal pad means and said backup pad means to accomplish isolation of the formation at the seal pad location;

means for generating first signals to be transmitted to aboveground equipment, which signals are a measure of said hydraulic pressure, and power supply means for said signal generating means; and,

means operable in response to a failure of said power supply means to effect release of said hydraulic setting pressure and permit retraction of said seal pad means and backup pad means.

4,248,082

ANEMOMETER

D. Eugene Farmer, Box 542, Mt. Gay, W. Va.

Filed Dec. 28, 1978, Ser. No. 973,858

Int. Cl.³ G01W *1/00*

U.S. Cl. 73—170 R **1 Claim**

1. A digital anemometer comprising:

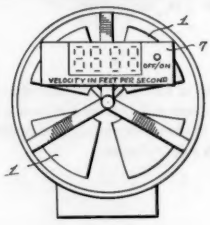
a shaft having a longitudinal axis;

a plurality of blades fixed to the periphery of said shaft extending perpendicularly from said axis such that a flow of fluid against said blades in a longitudinal direction causes said blades and said shaft to rotate about said longitudinal axis;

a magnet fixed to said shaft;

an insulated electrical coil wound about said magnet such that said magnet rotates within said coil and an electrical signal is generated therein when said shaft rotates, said signal having a maximum amplitude which is proportional to the rate of rotation of said shaft;

a plurality of light emitting diodes; and electrical means, responsive to said signal, for displaying said rate of rotation on said light emitting diodes;



said electrical means including means, coupled to said coil, for rectifying said electrical signal to produce a rectified signal;

means, coupled to said rectifying means, for generating electrical pulses at a rate proportional to the amplitude of said rectified signal;

means, coupled to said generating means, for generating a count of said pulses; and

said light emitting diodes being responsive to said count for displaying said rate of rotation.

4,248,083

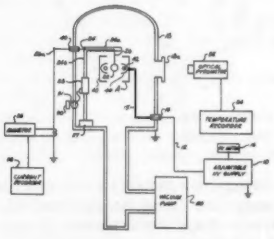
CONTAINERLESS HIGH TEMPERATURE CALORIMETER APPARATUS

Lewis L. Lacy; Michael B. Robinson, and Daniel B. Nisen, all of Huntsville, Ala., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jun. 29, 1979, Ser. No. 53,569

Int. Cl.³ G01K *17/00*

U.S. Cl. 73—190 R **14 Claims**



1. Calorimeter heating apparatus for heating a specimen of a material in a calorimeter device for determining thermophysical properties of the material, comprising:

a vacuum housing;

an annular cathode element carried in said vacuum housing adapted for connection to a high voltage power source whereby electrons are emitted from said cathode element;

support means for supporting specimens of different shapes and sizes closely adjacent said cathode element for bombardment by said emitted electrons;

annular collimating grid carried adjacent said cathode ele-

ment generally surrounding said cathode means so as to focus and direct the emission of electrons in general alignment toward said specimen for bombardment;

equipotential grid means substantially enclosing said collimating grid means and cathode element containing said emitted electrons to prevent the loss of emitted electrons and any bombardment and heating of said support means and associated structure affording accurate heating of said specimen, said equipotential grid means including an opening through which said specimen may be inserted and positioned by said support means for heating; and

said cathode element, collimating grid, and equipotential grid being operatively connected to common ground potential.

4,248,084

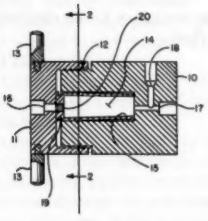
BOMB CALORIMETER

Frank H. Bell, Brigham City, and Denzel H. Bair, Garland, both of Utah, assignors to Thiokol Corporation, Newtown, Pa.

Filed Jun. 25, 1979, Ser. No. 51,667

Int. Cl.³ G01K *17/00*

U.S. Cl. 73—191 **22 Claims**



1. A bomb for a bomb calorimeter for use in a test for determining the heat output of a combustible material specimen or the like, said bomb being comprised of at least two separable portions including a cover and a body, means on said cover and body for coupling said portions together to form an enclosure, a chamber having at least one open end located in said body, port means in said body communicating with said chamber adapted to admit oxygen supplied thereto into said chamber, ignition means in said bomb including an igniter port for initiating combustion of said specimen, extractable specimen holder means in said chamber including means for sealingly closing said chamber and means on said holder means selectively enabling extraction of said holder means from said chamber when said test is completed.

4,248,085

MEASUREMENT OF RELATIVE VELOCITIES

John Coulthard, 1 Sinnington Close, Guisborough, Cleveland, England

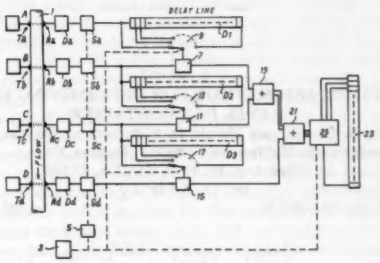
Filed Jan. 3, 1979, Ser. No. 785

Claims priority, application United Kingdom, Jan. 3, 1978, 95/78

Int. Cl.³ G01P *5/00*

U.S. Cl. 73—861.06 **22 Claims**

1. Apparatus for use in measuring the velocity of a relative movement between a first body and a second body or between a first body and a fluid, comprising at least two detectors which are each adapted to sense noise signals representing disturbances in the fluid or on the second body and which, in use, are mounted on the first body, correlating means associated with the detectors, the correlating means being adapted to generate data for producing at least two cross-correlation or auto-correlation curves from the noise signals detected by the detectors, and means for combining the data generated by the correlating means in such a matter as to enable a more rapid production of a combined cross-correlation or auto-correlation



curve from which the said velocity of relative movement can be computed.

4,248,086

DEVICE FOR MEASURING THE MASS FLOW OR FLOW RATE OF AN INSULATING LIQUID

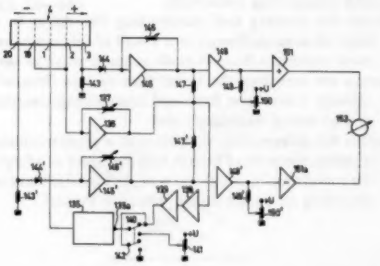
Jean L. Zizine, L'Hay-les-Roses, France, assignor to S.C.I. Le Brin, Champigny-sur-Marne, France

Continuation-in-part of Ser. No. 801,423, May 27, 1977, Pat. No. 4,167,114, which is a continuation-in-part of Ser. No. 634,631, Nov. 24, 1975, Pat. No. 4,056,003. This application Feb. 24, 1978, Ser. No. 881,115

The portion of the term of this patent subsequent to Sep. 11, 1996, has been disclaimed.

Int. Cl.³ G01F *1/64, 1/78*

U.S. Cl. 73—861.09 **26 Claims**



1. A measuring device for measuring the mass flow of a liquid, comprising:

first, second, third and fourth electrodes positioned in the path of said liquid flow, said first, second, third and fourth electrodes being electrically isolated from each other, said second electrode being spaced from said first electrode in the flow direction, said third electrode being spaced from said second electrode in the flow direction, said fourth electrode being spaced from said first electrode in the counter-flow direction and being electrically connected to said second electrode;

a voltage source coupled between said first electrode and said second, third and fourth electrodes for producing a corona discharge localized about said first electrode and for creating an electric field such that the ions produced by said first electrode move toward said second electrode, in the direction of the liquid flow;

a display device coupled between said third and first electrodes for displaying said liquid mass flow;

means coupled to said second, third and fourth electrodes and connected to a control input of said voltage source for stabilizing the current supplied to said first electrode; and

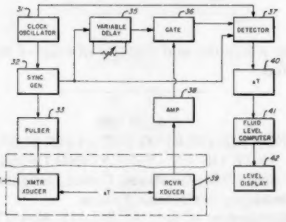
electrical means coupled to said third electrode for adjusting said measuring device for a nil liquid flow.

4,248,087

SYSTEM AND METHOD FOR DETERMINING FLUID LEVEL IN A CONTAINER

John R. Dennis, and Harold D. Fish, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Aug. 16, 1979, Ser. No. 67,844
Int. Cl.[3] G01F *23/28*
U.S. Cl. 73—290 V **20 Claims**



1. A system for measuring the level of fluid in a container tank comprising:

at least one acoustic transmitting transducer attached to an exterior surface of said container;

at least one acoustic receiving transducer attached to an exterior surface of said container and spaced apart from said transmitting transducer;

means for exciting said transmitting transducer to emit a burst of acoustic energy into a wall of said container, said burst exciting a flexural mode acoustic wave in said wall;

means for detecting the travel time of said flexural mode acoustic wave burst from said transmitting transducer to said receiving transducer; and

means for determining, according to a predetermined relationship, the level of fluid in said container as a function of the travel time of said flexural mode acoustic wave and for providing an output signal indicative thereof.

4,248,088

FLOAT FOR USE IN TANK GAUGING SYSTEMS

James B. McGown, Attleboro, Mass., and Ernest F. Root, Nashua, N.H., assignors to The Foxboro Company, Foxboro, Mass.

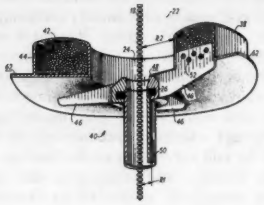
Filed May 24, 1979, Ser. No. 42,162
Int. Cl.[3] G01F *23/10, 23/12*
U.S. Cl. 73—319 **11 Claims**

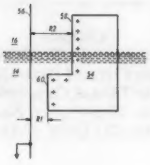
1. A float for use in determining the level of a liquid within a tank that includes a vertical guide positioned therein, said float comprising:

(a) a body member having a first aperture allowing said member to be positioned about said guide so as to be supportable by the liquid surface;

(b) discharge member means connected to said body member and extending downwardly therefrom to a level below the liquid surface, said discharge member means further including a second aperture at said level allowing it to be positioned about said guide;

(c) the dimensions of said apertures having a predetermined relationship that always maintains a path from said discharge member means through said liquid to said guide as





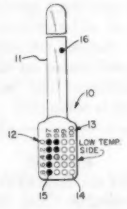
the path of least resistance for an electrostatic spark discharge of said float.

4,248,089

TEMPERATURE MEASURING

Ferdinand Heinmets, c/o Dynatrend Incorporated 131 Middlesex St., Burlington, Mass. 01803

Filed Sep. 8, 1975, Ser. No. 611,231
Int. Cl.[3] G01N *25/04*
U.S. Cl. 73—356 **25 Claims**



1. A thermometer comprising:

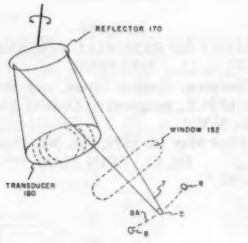
means defining an array of regions containing crystalline heat sensitive materials which undergo a reversible change in state of crystallization from a crystalline solid to a viscous liquid at a progressive series of predetermined temperature levels to produce opacity changes at said regions,

the materials comprising saturated aliphatic carboxylic acid mixtures, and esters thereof, of adjacent members of the same odd carbon atom number series and being effective to retard the rate of recrystallization of said heat sensitive materials between temperatures of about room temperature to said predetermined temperature levels.

4,248,090
APPARATUS FOR ULTRASONICALLY IMAGING A BODY

William E. Glenn, Ft. Lauderdale, Fla., assignor to New York Institute of Technology, Old Westbury, N.Y.

Filed Mar. 27, 1978, Ser. No. 890,377
Int. Cl.[3] G01N *29/04*
U.S. Cl. 73—620 101 Claims



1. Apparatus for ultrasonically investigating a slice of a body to obtain an image thereof, comprising:

means for generating an energizing signal;

a transducer coupled to said energizing means for generating a beam of ultrasonic energy;

a focusing lens for focusing said beam, said lens having a thickness defined by a surface of revolution around the axis of said beam;

means for scanning said beam across said body along the plane of the slice of the body to be imaged;

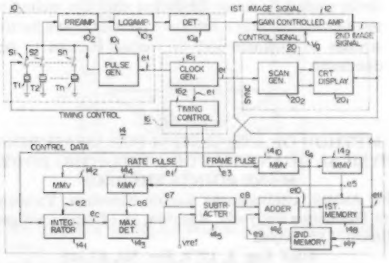
said transducer having a periphery which is elongated along the direction of the scan, whereby the spot resulting from the focused ultrasonic beam is elongated in a direction normal to the direction of scan; and

means for converting ultrasound reflected from said body into an electrical representation of said slice of the body.

4,248,091
ULTRASONIC PULSE-ECHO APPARATUS

Mutsuo Hashiguchi, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 30, 1979, Ser. No. 43,808
Claims priority, application Japan, Jun. 30, 1978, 53/79469; Aug. 14, 1978, 53/98783; Aug. 28, 1978, 53/103802
Int. Cl.[3] G01N *29/00*
U.S. Cl. 73—631 13 Claims



1. An ultrasonic pulse-echo apparatus comprising:

(a) transducer means which transmits an ultrasonic beam into a multilayered object to be examined and converts ultrasonic pulses reflected at interfaces between the layers within the object into a first image signal;

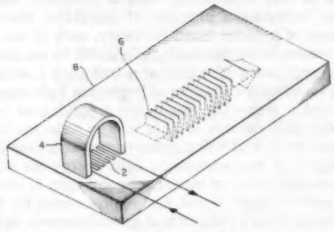
(b) X-Y type display means which is intensity-modulated by a second image signal for displaying an image within the object;

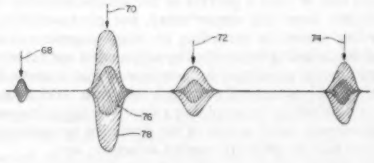
(c) a signal processing means which amplifies the first image signal by a given amplification degree to produce the second image signal which comprises: a timing circuit which transfers to said transducer means a timing control signal for determining transmitting and receiving timings of the ultrasonic pulses, transfers to the display means a scanning synchronizing signal to synchronize the scannings of X- and Y-axes with the transmitting/receiving timing of the ultrasonic pulses, and produces a first pulse with a period corresponding to the X-axis scanning of the display means and the timing of the ultrasonic pulse transmission, and a second pulse corresponding to the timing of the Y-axis scanning of the display means; a gain controlled amplifier which receives the first image signal and produces the second image signal, and a control means which integrates control data corresponding to the second image signal to keep uniform an average brightness of an image displayed on the display means, accumulates the result of the integration at the timing corresponding to the second pulse and provides the accumulated result as a control signal for the succeeding frame or field to said gain controlled amplifier of which the given amplification degree is determined by the control signal.

4,248,092
METHOD AND APPARATUS FOR EFFICIENTLY GENERATING ELASTIC WAVES WITH A TRANSDUCER

Carmine F. Vasile; Robert B. Thompson, both of Thousand Oaks, Calif., and Christopher M. Fortunko, Albuquerque, N. Mex., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 916,445, Jun. 19, 1978, abandoned. This application Apr. 25, 1979, Ser. No. 32,993
Int. Cl.[3] G01N *29/04*
U.S. Cl. 73—643 11 Claims





11. A method for efficiently generating a horizontal shear wave in a material having a thickness t, comprising the steps of:

positioning a horizontal shear wave transducer near a surface of the material, the transducer being selected to induce a higher than fundamental mode wave in the material; and

driving the transducer with an AC signal at a frequency which is selected to be above the cutoff frequency for the higher mode wave but is sufficiently close to the cutoff frequency to drive the transducer with at least a preselected increase in efficiency relative to the efficiency

attainable with a fundamental mode horizontal shear wave, the cutoff frequency f_c being defined as:

$$f_c = v_s n/2t$$

where:

v_s = the horizontal shear wave velocity in the material

n = the integral mode number of the wave ($n \geqq 1$).

4,248,093

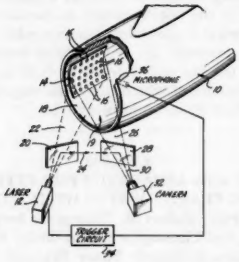
HOLOGRAPHIC RESOLUTION OF COMPLEX SOUND FIELDS

Anders O. Andersson, Seattle, and Robert B. Purves, Kent, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Apr. 13, 1979, Ser. No. 29,632

Int. Cl.³ G03H *3/00*

U.S. Cl. 73—656 **7 Claims**



1. Apparatus for determining the spatial distribution of an acoustic field along a boundary wall of an acoustically excited structure, said apparatus comprising:

a sensor array mounted to at least a portion of said boundary wall of said acoustically excited structure, said sensor array including a plurality of individual spaced apart sensors of predetermined geometry, each of said individual sensors being elastically deformable by incident acoustic energy, each of said sensors including a surface layer that is diffusely reflective to impingent light energy;

holographic recording means for supplying at least two holographic records of light energy reflected from said sensor array, said holographic recording means including a source of monochromatic light energy for selectively generating pulses of monochromatic light in response to an applied trigger signal, first optical means for directing a portion of each pulse of said monochromatic light to said sensor array and for forming a reference beam, second optical means for receiving and combining said reference beam and at least a portion of the monochromatic light reflected from said sensor array, and photosensitive recording means for recording an image representative of said combined light supplied by said second optical means;

detector means positioned for response to said acoustic field within said acoustically excited structure, said detector means including for supplying a signal having a frequency substantially equal to that of the dominant acoustic signal within said acoustically excited structure; and

trigger means responsive to said signal supplied by said detector means for supplying said trigger signal to said source of monochromatic light at a frequency substantially equal to said dominant acoustic signal within said acoustically excited structure, said trigger means including means for supplying a first pair of trigger signals to said source of monochromatic light that are spaced apart in time by nT/2, where n is an odd integer and T is the period of said dominant acoustic signal, said first pair of trigger signals causing said source of monochromatic light to doubly expose said photosensitive means and form a first holographic interferogram, said trigger means further including means for supplying a second pair of trigger signals that are spaced apart in time by nT/2 with the first trigger signal of said second pair of trigger signals being spaced apart in time from the final trigger signal of said first pair of trigger signals by mT/4, where m is an odd integer, said second pair of trigger signals causing said source of monochromatic light to doubly expose said photosensitive means and form a second halographic interferogram.

4,248,094

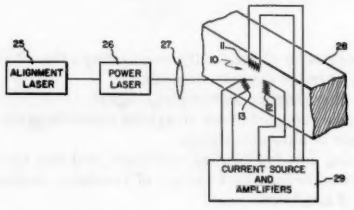
MEASUREMENT OF RESIDUAL STRESSES BY LOCAL MELTING

Robert A. Thompson, Quaker Street, and Hsin-Pang Wang, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 10, 1979, Ser. No. 37,872

Int. Cl.³ G01N *33/00*

U.S. Cl. 73—760 **8 Claims**



1. A semi-nondestructive method of making surface strain measurements on an object for determination of residual stresses comprising the steps of:

attaching a strain gage to the surface of the object being tested,

temporarily locally melting a region of the object in the immediate vicinity of the strain gage with a finely directed heat source to thereby relieve the stresses,

measuring the change in strain caused by stress relaxation after the melted region resolidifies and after a sufficient period of time for thermal stresses to substantially dissipate and for recast stresses to become dominant, and

subtracting from the measured strain of the object being tested a calibration measurement of strain on an annealed specimen of the same material as the object being tested and made by identically temporarily locally melting a region in the immediate vicinity of a strain gage with a finely directed heat source, and measuring the change in strain caused by stress relaxation after the melted region resolidifies and after a sufficient period of time for thermal stresses to dissipate and for recast stresses to become dominant.

4,248,095

METHOD OF AND SYSTEM FOR MEASURING PHYSICAL QUANTITIES OF A ROTATING BODY AT MANY POINTS THEREOF

Toshio Akatsu, Ushikumachi; Kazuto Kinoshita, Yatabemachi, and Toshimitsu Fujiyoshi, Kashiwa, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 3, 1979, Ser. No. 63,445

Claims priority, application Japan, Aug. 9, 1978, 53-96233

Int. Cl.³ G01B *7/18*; G08C *15/10*

U.S. Cl. 73—771 **9 Claims**

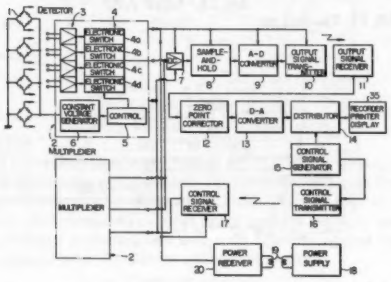
1. A method of measuring physical quantities of a rotating body at many measuring points thereof, comprising the steps of:

(a) converting said physical quantities to corresponding

electrical signals by detecting devices provided at said measuring points,

(b) changing over switching means incorporated in said rotating body and connected with output terminals of said detecting devices, in response to control signals from outside of said rotating body so as to serially deliver said electrical signals,

(c) switchably supplying an operating voltage to a selected one of said detecting devices depending on the control signals from the outside of said rotating body at a predetermined timing before activation of said switching means for said selected detecting device,



(d) applying the control signals to said switching means by a first electromagnetic signal-transmission means from outside said rotating body in no relation to the revolution of the rotating body, and

(e) taking said serially delivered electrical signals out of said rotating body by a second electromagnetic signal-transmission means in no relation to angular orientation of the rotating body, to thereby allow high-speed measurements of different physical quantities on a time-shared basis.

4,248,096

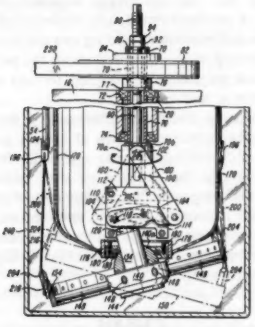
MACHINE FOR FATIGUE TESTING OF MATERIALS

Alfred L. Marcum, Centerville, Ohio, assignor to Monsanto Research Corporation, St. Louis, Mo.

Filed Jun. 18, 1979, Ser. No. 49,428

Int. Cl.³ G01N 3/32

U.S. Cl. 73—828 **20 Claims**



1. A machine for testing the fatigue properties of a specimen comprising:

drive means rotating about a given axis,

rotary means, the rotary means having a first portion a second portion, the first portion of the rotary means being within the axis of rotation of the drive means, the second portion of the rotary means being in spaced relationship from the axis of rotation of the drive means,

connector means joining the drive means to the second portion of the rotary means for rotation of the rotary means with rotation of the drive means,

first attachment means, the first attachment means being joined to the rotary means and having a given angular relationship with respect thereto, the first attachment means being joined to the rotary means for relative rotational movement between the first attachment means and the rotary means while maintaining the given angular relationship with regard thereto,

second attachment means, the second attachment means being stationary and in spaced relationship from the first attachment means,

securing means for joining a plurality of specimens to the first attachment means and to the second attachment means, as the specimens are in given positions and extend between the first attachment means and the second attachment means,

the drive means rotating the rotary means, rotation of the rotary means thus causing angular oscillating movement of the first attachment means with respect to the second attachment means, the specimens thus being cyclically placed in tension as the specimens remain in the given positions thereof.

4,248,097

TORSION SHEAR APPARATUS

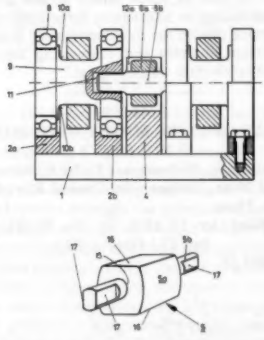
Gerhard Fauner, Röntgenstrasse 10, D-8032 Lochham, Fed. Rep. of Germany

Filed Apr. 3, 1979, Ser. No. 26,564

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1978, 2814786

Int. Cl.³ G01N 3/22, 3/24

U.S. Cl. 73—842 **8 Claims**



1. A torsion shear apparatus, for testing adhesives in which two members of a test specimen bonded one into the other are subjected to a torsional load, comprising rigid retainer means for non-rotatable and form-locked retention of the first member of the test specimen, an operating member rotatably mounted in a radial bearing system in horizontal alignment with the retainer means and adapted for form-locked and non-rotatable engagement with the second member of the test specimen, and torsion-applying means for rotating said operating member relative to said retainer means, characterized in that said operating member comprises a web connecting two radial bearings each supported in a bearing support, said web being engaged by a horizontal load lever forming said torsion-applying means, and in that said retainer means comprises a sliding guide portion having guide surfaces extending transversely of the radial bearings and permitting radial displacement of said first test specimen member.

4,248,098

FLOW METERING APPARATUS

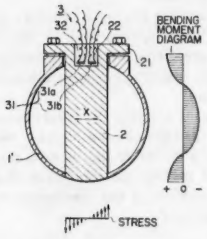
Takehiro Sawayama; Ichizo Ito; Toshio Aga, and Tetsuo Ando, all of Musashino, Japan, assignors to Yokogawa Electric Works, Ltd., Tokyo, Japan

Filed May 30, 1978, Ser. No. 910,638

Claims priority, application Japan, May 30, 1977, 52-63124; May 30, 1977, 52-63125; Nov. 10, 1977, 52-151495; Nov. 11, 1977, 52-135302

Int. Cl.[3] G01F *1/32*

U.S. Cl. 73—861.24 12 Claims



1. A flow metering apparatus comprising:

a duct in which a fluid to be measured flows;

a pillar-shaped vortex generator in said duct;

a pair of force sensor means in said vortex generator and positioned to receive differential stresses produced therein due to the vortices generated thereby; and

securing means comprising a pillar-shaped member pressed against said pair of force sensor means in the vortex generator and inelastic material engaging said sensor means for firmly securing and sealing said force sensor means inside the vortex generator to provide that said force sensor means is effectively integral with said vortex generator, whereby the pair of force sensor means are capable of directly detecting an alternating force applied to the vortex generator due to the development of Karman's vortices generated thereby and converting said alternating force into an electric output signal.

4,248,099

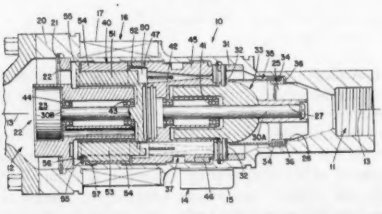
MASS RATE OF FLOW METER WITH IMPROVED FLUID DRIVE

Malcolm H. Allen, Jr., Melrose, and Colby E. Buzzell, Wilmington, both of Mass., assignors to General Electric Company, Wilmington, Mass.

Filed Oct. 12, 1979, Ser. No. 84,061

Int. Cl.[3] G01F *1/82*

U.S. Cl. 73—861.36 4 Claims



1. In a mass rate of flow meter of the angular momentum type, having a swirl generator for imparting angular momentum to the measured fluid stream, a restrained reaction turbine located downstream from the swirl generator for removing the imparted angular momentum, the improvement of a substantially cylindrical conduit means for controlling fluid flow to and coaxial with the swirl generator comprising:

A. multiple, longitudinally extending, independently deflectible, resilient fingers which deflect in response to fluid pressure for conducting fluid to the swirl generator; and

B. sealing means contiguous to said resilient fingers for substantially reducing fluid leakage between said resilient fingers.

4,248,100

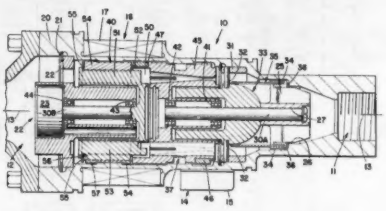
MASS RATE OF FLOW METER WITH IMPROVED MAGNETIC CIRCUIT

Colby E. Buzzell, Wilmington, Mass., assignor to General Electric Company, Wilmington, Mass.

Filed Oct. 12, 1979, Ser. No. 84,390

Int. Cl.[3] G01F *1/82*

U.S. Cl. 73—861.36 3 Claims



1. In a mass rate of flow meter including a housing with inlet and outlet ports for defining a flow passage therebetween, swirl generating means in the housing at the input port for imparting angular velocity to a fluid flowing through said housing, a rotor means in the housing having an input end spaced from the swirl generating means and an exit end for conveying fluid from the swirl generator therethrough and for rotating in an unrestrained manner, the rotor means including first magnetic means at an input end thereof, sensing coil means disposed on the housing for sensing the passage of the first magnetic means past the first sensing coil thereby to produce a first signal, and restrained turbine means having an input end spaced from the exit end of the rotor means and an output end disposed adjacent to the output port of the housing, the improvement of means for sensing the deflection of the restrained turbine, said sensing means including:

A. second magnetic means disposed near the periphery of the rotor means at the exit end thereof in a predetermined relationship to the first magnetic means for generating magnetic flux,

B. magnetic flux linkage means disposed on the turbine means at a predetermined, circumferential position and having an end portion extending toward the rotor means,

C. flux collecting means disposed about the periphery of the turbine and magnetically coupled to said magnetic flux linkage means, and

D. second sensing coil means disposed on the housing and being axially coextensive with at least a portion of said magnetic flux linkage means and said flux collecting means whereby the passage of said second magnetic means by said magnetic flux linkage means produces a flux change that induces a signal in said second sensing coil means and wherein the flux collecting means reduces the reluctance between said magnetic flux linkage means and said second sensing coil.

4,248,101

DRIVE UNITS PROVIDED WITH DRIVING ROLLERS

Giovanni Santoro, Rome, Italy, assignor to Werbetronic AG, Mauren, Liechtenstein

Filed Sep. 8, 1978, Ser. No. 940,825

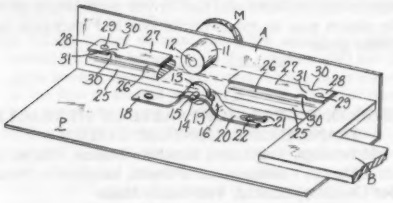
Claims priority, application Italy, Sep. 9, 1977, 50949 A/77

Int. Cl.[3] F16H *35/18, 21/44*

U.S. Cl. 74—10 R 18 Claims

1. Drive unit comprising first and second cylindrical elements mounted in parallel relationship so as to be rotated on a base and pushed against each other, at least one of said first and

second cylindrical elements being driven so as to be rotated, and a flat elongated element engaged between said two cylindrical elements so that a rotation of said two cylindrical elements in one or the other direction causes a corresponding translation of said elongated element, wherein said elongated



element comprises a rigid bar having a substantially rectangular cross section but with a slightly convex rounded upper face and a strip secured to said rounded face of said bar only at its two ends, said elongated element being position between said two cylindrical elements with said strip abutting against and being engaged with the driven cylindrical element.

4,248,102

PUSH BUTTON TYPE TUNER APPARATUS

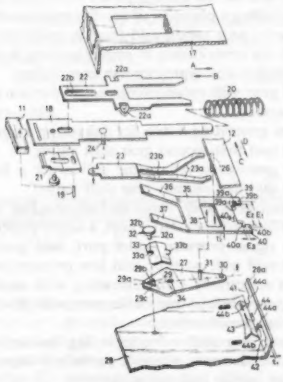
Teruo Shimazu, Atsugi, and Yoshihiko Maejima, Numazu, both of Japan, assignors to Mitsumi Electric Co. Ltd., Chofu, Japan

Filed Nov. 7, 1978, Ser. No. 958,954

Claims priority, application Japan, Nov. 17, 1977, 52-154571[U]; Dec. 2, 1977, 52-160985[U]; May 15, 1978, 53-64769[U]

Int. Cl.³ H03J *1/06*

U.S. Cl. 74—10.33 **10 Claims**



1. A push button type tuning apparatus comprising a plurality of push buttons fixed to their associated push plates and adapted to be pressed at the time of preset tuning and retuning operations;

lock plates provided on each of said push plates and having a pair of locking projections at opposite lateral sides thereof, one on each side;

memory plates provided rotatably with repect to each of said push buttons;

clamp plates having, at opposite lateral sides thereof, a pair of clamping arms one on each side, extending along said push plate and provided in a displaceable manner with respect to each of said push buttons, said clamp plate is being pressed responsive to pre-set tuning manipulation, at said clamping arms thereof by said locking projections of said lock plate to undergo displacement for clamping said memory plates;

a slide plate adapted to slide in connection wth a tuning part on manual tuning operation or retuning operation by said push buttons; and

comparators pivotally supported on push plate to which said push buttons are fixed and having restriction parts, said restriction parts restricting said memory plate to a a position registered with said slide plate on preset tuning, and restricting said slide plate to a position registered with said memory plate as clamped on retuning, said comparators being disposed to extend between said pair of clamping arms of said clamp plates, and said memory plate having a journal-bearing part constituting of a pin and a hole, so that said pin and said hole make contact with each other at two separate points.

4,248,103

STRAIGHT LINE MECHANISM

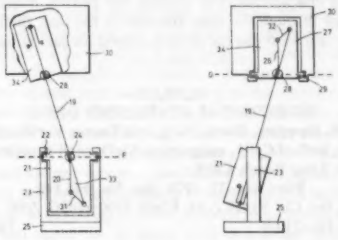
James R. Halsall, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Sep. 5, 1978, Ser. No. 939,918

Claims priority, application United Kingdom, Sep. 6, 1977, 37133/77

Int. Cl.³ F16H *21/04, 21/52*

U.S. Cl. 74—103 **14 Claims**



1. A linkage mechanism for an industrial manipulator comprising at least two straight line mechanisms, each straight line mechanism comprising a rotatable member **(31, 32)** and a second member **(19)** both said members being mounted such that when a rotary movement of the rotatable member occurs the axis (C) which passes through the rotatable member moves in a first straight line or a geometric point (B) on the second member moves in a straight line, which straight line movement occurs in a plane perpendicular to the axis and may be resolved into two mutually perpendicular components in the said plane to provide a minor component on a line passing through the axis and the geometric point; said straight line mechanisms arranged such that movement in a plane of a geometric point on the linkage mechanism is effected by or effects a coordinated rotary movement of the rotatable member of the straight line mechanisms, the perimeter of the said plane being determined by the straight lines, or by lines parallel thereto along which straight line movement of the said straight line mechanisms occurs.

4,248,104

METHOD OF AND MEANS FOR PROVIDING A CAM-ACTUATED, SPRING-RETURN MECHANISM WHEREIN THE TORQUE OUTPUT IS A FUNCTION OF THE CAM PROFILE

David B. Wood, III, Butler County, OH, assignor to Xomox Corporation, Cincinnati, Ohio

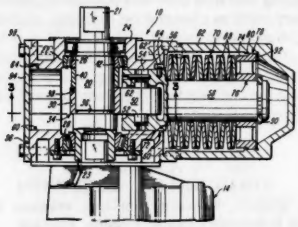
Filed Aug. 1, 1977, Ser. No. 820,927

Int. Cl.³ F16H *53/06*

U.S. Cl. 74—569 **49 Claims**

1. The method of providing a cam-actuated, spring-return

mechanism of the type which includes a cam on a rotatable cam shaft rotatable a maximum of less than 360° from a first position to a second position in one direction by an external torque, a spring to return the cam shaft from its second position to its first position when the external torque ceases to act on the cam shaft, and a cam follower between the cam and the spring, with the cam shaft having a predetermined torque output curve when the cam shaft is returned from its second position



to its first position by the force of the spring acting on the cam follower, which comprises the steps of:

a. determining the cam profile required to achieve the predetermined torque output curve;

b. and selecting a spring having the proper spring rate and load characteristics to provide the desired magnitude of force through the cam follower to the cam shaft so that the cam shaft has the predetermined torque output curve.

4,248,105

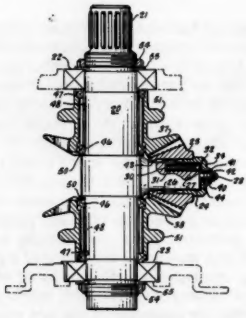
HORIZONTAL STABILIZER DRIVE

James W. Downing, Buena Park, and Teunes Verhoeven, Long Beach, both of Calif., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Sep. 27, 1978, Ser. No. 946,145

Int. Cl.[3] F16H *1/44*; F16D *9/00*; G05G *7/00*

U.S. Cl. 74—710.5 **14 Claims**



1. In an airplane, an apparatus for the transmission of mechanical power to a first and second driven means which, in turn, drive a single control surface which comprises:

an epicylic gear train of the differential motion type, said gear train comprising two driven gears and a pinion gear with said pinion gear mounted for rotation on an axle which is attached to an arm which is turning about the axis of at least one of said driven gears;

means for retaining said pinion gear to said pinion axle so that said pinion gear will rotate on said pinion axle only after a predetermined torque is applied to said pinion gear;

means for disengaging said pinion gear from said driven gears after release of said means for retaining said pinion gear to said pinion axle; and

means for attaching said first and second driven means to one each of said driven gears;

whereby an input torque applied to said epicyclic gear train causes said arm with said pinion gear to rotate, driving both driven gears without relative movement between the three gears until a predetermined differential torque is experienced between said two driven gears which allows the pinion gear to rotate on its axle and disengage said driven gears.

4,248,106

FIRST-SECOND GEAR SHIFT VALVE OF HYDRAULIC TRANSMISSION CONTROL SYSTEM

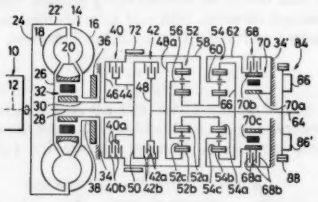
Kazuyoshi Iwanaga, Yokohama; Kazuhiko Sugano, Tokyo, and Kunio Ohtsuka, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jan. 23, 1979, Ser. No. 5,889

Claims priority, application Japan, Sep. 29, 1978, 53-120983

Int. Cl.[3] B60K *41/06*

U.S. Cl. 74—868 **6 Claims**



1. A hydraulic control system for an automatic transmission for a motor vehicle, the transmission having a plurality of forward drive gear ratios including a first forward drive gear ratio lower than at least one other forward drive gear ratio, the transmission including a plurality of friction units contributing to shifting between gear ratios, said friction units including a first friction unit for contributing to engine braking in said first gear ratio, the hydraulic control system comprising:

a first-second gear shift valve having a wall portion defining a valve chamber;

signal pressure generating means for delivering a signal fluid pressure to said first-second gear shift valve;

line pressure generating means for delivering a line fluid pressure to said first-second gear shift valve;

said first-second gear shift valve including a line pressure inlet port, a line pressure outlet port, a signal pressure inlet port and a signal pressure outlet port, said ports being disposed in said wall portion; said line pressure inlet and outlet ports selectively communicating with each other; said signal pressure inlet and outlet ports selectively communicating with each other;

said first-second gear shift valve including first and second separate valve elements movable partially independently of each other within said valve chamber;

said first valve element being movable between upshift and downshift positions, said first valve element including means for effecting communication between said line pressure inlet and outlet ports when said first valve element is in the upshift position to, in turn, effect communication between said line pressure generating means and a friction unit other than said first friction unit to establish a gear ratio other than said first gear ratio, said first valve element also including means for blocking communication between said line pressure inlet and outlet ports when said first valve element is in the downshift position to, in turn, block communication between said line pressure generating means and said other frictional unit;

said first valve element further including means for blocking communication between said signal pressure inlet and outlet ports when said first valve element is in said upshift

position to, in turn, block communication between said signal pressure generating means and said first friction unit when said first valve element is in said upshift position;

said second valve element being movable between a first position abutting said first valve element in said downshift position and a second position either separated from said first valve element if said first valve element is in said downshift position or abutting said first valve element if said first valve element is in said upshift position;

said second valve element including means for effecting communication between said line pressure inlet and outlet ports irrespective of whether said second valve element is in the first or second position thereof, provided that said first valve element is in said downshift position thereof;

said first valve element including a first pressure acting area exposed to signal pressure from said signal pressure inlet port, when said first and second valve elements abut each other, and a second pressure acting area which includes said first pressure acting area, exposed to signal pressure from said signal pressure inlet port when said first and second valve elements are separated from each other;

said second valve element including a third pressure acting area exposed to signal pressure from said signal pressure inlet port when said first and second valve elements abut each other and a fourth pressure acting area, which includes said third pressure acting area, exposed to signal pressure from said signal pressure inlet port when said first and second valve elements are separated from each other;

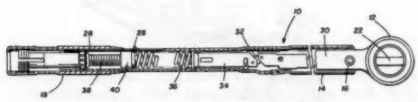
whereby selection of the manual first range effects pressurization of said first and third pressure acting areas when said first valve element is in the downshift position to in turn effect opposing forces on said first and second valve elements to effect separation thereof, the separation of the first and second valve elements exposing said second pressure acting area of said first valve element to said signal pressure to maintain said first valve element in the downshift position even against an upshift tendency.

4,248,107

ADJUSTING TORQUE WRENCH

Raymond J. Blattner, Palos Hills, Ill., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Aug. 17, 1979, Ser. No. 67,583
Int. Cl.³ B25D *23/142*
U.S. Cl. 81—483 **4 Claims**



1. In an adjusting torque wrench including a wrench head, a hollow lever arm pivotally connected at one end to the wrench head, a rotatable hollow grip member encircling a portion of the other end the arm, adjustable means within said arm and grip member for preventing pivoting of said head relative to said arm until the torque on said head exceeds a preselected value, and an improved latch mechanism for selectively preventing and permitting adjustment of said torque comprising:

an adjusting screw located within said arm and grip member for rotation therewith, said screw including a radial flange portion having a plurality of circumferentially spaced recesses therein; and

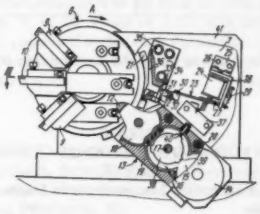
a latch member slidably carried by said arm and extending within said grip member, said latch member including a detent portion arranged to fit within said recesses and an operating portion located outside said grip member whereby said latch member is movable in said arm to place said detent portion in engagement with said flange portion preventing rotation of said grip member relative to said arm and movable out of engagement to permit relative rotation and adjustment of said pre-selected torque.

4,248,108

LATHE

David N. Tverskoi, ulitsa Pushkina, 17/25, kv. 184; Alexandr G. Kashirsky, ulitsa Shelkovichnaya, 184, kv. 73; Jury N. Sulie, ulitsa Sovetskaya, 63, kv. 9, and Dmitry N. Trofimov, ulitsa Bolshaya Sadovaya, 54, kv. 148, all of Saratov, U.S.S.R.

Filed Jun. 18, 1979, Ser. No. 49,781
Claims priority, application U.S.S.R., Aug. 8, 1978, 2640256
Int. Cl.³ B23B *3/00, 29/00*
U.S. Cl. 82—2 R **3 Claims**



1. A lathe, comprising: a bed; a headstock mounted on said bed; a saddle mounted on said bed; means for traversing said saddle; a turret mounted on said saddle; a plurality of tool-holders mounted on the face of said turret; a plurality of teeth provided on the peripheral cylindrical portion of said turret, the number of said teeth corresponding to the number of said tool-holders; a reversible electric motor kinematically associated with said turret for its being indexed in order to set one of said tool-holders to the cutting position; an electric circuit to control said electric motor; a mechanism for fixing said turret in position, said mechanism being mounted on said saddle and comprising: an actuating member adapted to interact with said teeth of said turret for its being fixed in a preset position, a solenoid mounted on said saddle, an electric circuit to control said solenoid, a linkage interconnecting said actuating member to said armature of said solenoid; a pickup for monitoring the travelling of said teeth through the zone of fixing; a switch to control the sense of rotation of said electric motor; said pickup for monitoring the teeth travelling through the zone of fixing being electrically connected through said switch to said control circuits of said electric motor and said solenoid, whereby setting any of said tool-holders to the cutting position is carried out along a shortest possible pathway.

4,248,109

PULL TYPE CUT-OFF PRESS

Raymon Z. Tucker, Elkhart, Ind., assignor to Roll Form Corporation, Elkhart, Ind.

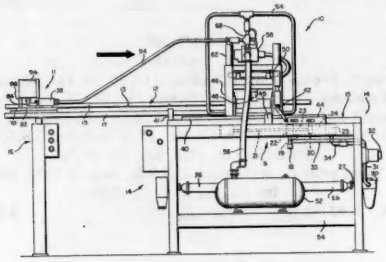
Filed Aug. 21, 1979, Ser. No. 68,448
Int. Cl.³ B23D *25/04, 25/16*
U.S. Cl. 83—37 **13 Claims**

12. A method of cutting a part from a stock piece continuously moving in a forward direction which has a series of spaced indices, each of said indices having a forward and a rearward surface, by a cut-off press comprising the following steps:

accelerating the press in the direction of the stock piece and controlling the rate of acceleration so that the press is moving faster than the speed of the stock piece until one of the indices is engaged on its forward surface by a pick up means spaced from the press and then maintaining a force so that the press is in pulling engagement with the indice;

cutting the part from the stock piece;

disengaging the pick up means from the moving stock piece; and



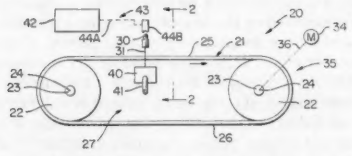
returning the press in the opposite direction of the moving stock piece.

4,248,110

APPARATUS FOR AND METHOD OF CUTTING A BELT SLEEVE

Paul L. Spivy, Rogersville, Mo., assignor to Dayco Corporation, Dayton, Ohio

Filed Jul. 24, 1979, Ser. No. 60,097
Int. Cl.[3] B26F *3/00*
U.S. Cl. 83—53 **16 Claims**



1. In a method of cutting a substantially polymeric belt-defining sleeve having a tension section defining layer, a compression section defining layer, and a load-carrying section defining layer to define a plurality of endless power transmission belt constructions each having a section corresponding to each of said layers, the improvement comprising the steps of, rotating said belt sleeve on rotating means, and cutting a plurality of axially spaced cuts through said layers with jet nozzle means disposed at a fixed position, said jet nozzle means providing high velocity liquid jet means to define an endless power transmission belt between associated pairs of said cuts, said high velocity liquid jet being provided by providing orifice means ranging between 0.001 and 0.050 inch in diameter in said jet nozzle means and supplying liquid at a pressure ranging between 10,000 and 100,000 psig to said orifice means to define said high velocity liquid jet means therethrough, said high velocity liquid jet means enabling cutting of said substantially polymeric sleeve with minimum distortion thereof during cutting resulting in each endless power transmission belt having precisely formed side walls.

4,248,111

PUNCH GUIDE ASSEMBLY

Kenneth J. Wilson, Roseville, and Ronald G. Rosene, Anoka, both of Minn., assignors to Wilson Tool Company, White Bear Lake, Minn.

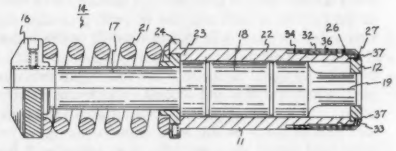
Filed Jul. 16, 1979, Ser. No. 57,967
Int. Cl.[3] B26D *7/06*; B26F *1/14*
U.S. Cl. 83—140 **5 Claims**

1. A punch guide assembly usable with a punch assembly and comprising:

(a) sleeve means for receiving at least part of a punch assembly, including a tube having at least one open end and further including a plurality of holes disposed through said tube proximal said open end;

(b) stripper plate means receivable within said open end for substantially preventing stripping during operation of the punch assembly, the stripper plate means including a recess disposed thereon that is alignable with at least some of said holes when said stripper plate means is received within said open end, thereby forming a plurality of aligned hole and recesss combinations;

(c) clip tab means including a plurality of holding tabs re-



movably insertable into said aligned hole and recess combinations and being operable to releasably restrain the removal of said stripper plate means from the sleeve means; and

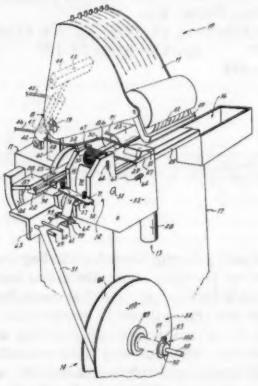
(d) said sleeve means further includes grooved track means disposed circumferentially about said tube proximal said open end, and providing access to said clip tabs to permit said clip tabs to be urged outwardly to withdraw said holding tabs from the stripper plate means recess, whereby the stripper plate means may be easily removed from the sleeve means.

4,248,112

LABEL MACHINE

Bobby J. Clay, Cincinnati, Ohio, assignor to Natmar, Inc., Cincinnati, Ohio

Filed Jun. 29, 1978, Ser. No. 920,178
Int. Cl.[3] B26D *5/24*
U.S. Cl. 83—241 **7 Claims**



1. A machine for forming tape sections of a predetermined length from an endless tape strip, said machine comprising

a drive roll adapted to extend said endless tape strip in response to rotation thereof,

a brake shoe reciprocable into and out of braking relation with said drive roll, the reciprocable stroke length of said brake shoe relative to said drive roll controlling the tape section length extended by said drive roll, said brake shoe being movable into braking relation with said drive roll when said drive roll has extended said endless tape strip a predetermined length for insuring generally accurate tape section length time after time,

brake shoe locator structure for varying the reciprocable stroke length of said brake shoe relative to said drive roll, said locator structure permitting an increase or decrease in the length of said tape section as extended in response to an increase or decrease of said brake shoe stroke length relative to said drive roll, and

a cutter assembly operable to cut said tape section of predetermined length from said endless tape strip.

4,248,113

CUTTER GUIDE DRIVE FOR CIGARETTE-MAKING MACHINE

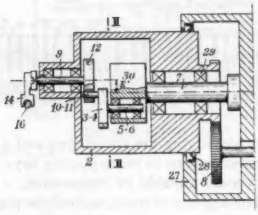
Jean Verjux, Montgeron, France, assignor to Decoufle S.A.R.L., Paris, France

Filed Jul. 24, 1979, Ser. No. 60,233

Claims priority, application France, Jul. 24, 1978, 78 21827

Int. Cl.³ A24C *5/28*; B26D *1/56*

U.S. Cl. 83—310 **3 Claims**



1. A cutter guide drive for a cigarette-making machine having a cutter guide member carried on a shaft of a yoke having two bearings, each said bearing being mounted on a crankpin of a respective one of a pair of balanced cranks having the same throw, said shaft having its axis at the apex of an isosceles triangle of which the other two corners are coincident with the respective axes of the two bearings, said shaft forming the crankpin of a third crank having the same throw as said pair of cranks, said third crank being driven in rotation, whereby when in operation said cutter guide member moves in a plane parallel to itself at right angles to a continuous cigarette rod, and said cutter guide drive is located in an oil-tight case enclosing said yoke and said cranks.

4,248,114

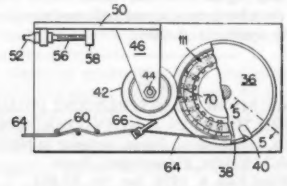
CUTTER OF ELONGATED MATERIAL

David C. Alexander, and Vance R. Meek, both of Salisbury, N.C., assignors to Fiber Industries, Inc., New York, N.Y.

Filed Feb. 28, 1979, Ser. No. 15,975

Int. Cl.³ D01G *1/04*

U.S. Cl. 83—347 **6 Claims**



1. An improved apparatus for cutting material such as filamentary tows into predetermined lengths comprising (a) a cutting assembly including a plurality of spaced apart knife edges secured to a mounting member at equal radial distances from a point on said mounting member thereby forming a reel, each of said radial distances in every instance being less than the distance from said point to the periphery of said mounting member; (b) said cutting assembly having means adapted to receive successive wrappings of material to be cut in contact with a plurality of said knife edges, so that no relative movement occurs between said material and said knife edges longitudinally of said material; and (c) means for forcing said material between adjacent knife edges, thereby severing said material into lengths of controlled dimensions, wherein the improvement comprises:

means for preventing all of said knives from moving in a direction longitudinal of said knife edges; wherein said prevention means comprises an annular ring of pressure loaded resilient material, said resilient material being pressed against at least one end of each said knife; wherein said resilient material is in the form of a flat gasket having thickness, T, in the range of 1/32 inch to ¼ inch and a hardness, measured by Shore A durometer, in the range of 20 to 60; and wherein said gasket has a life many times the life of said knives.

4,248,115

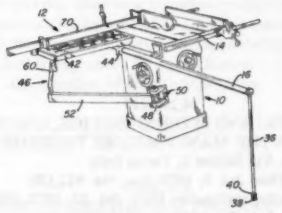
SLIDING TABLE ASSEMBLY - TILTING ARBOR SAWS

Joseph F. Brodbeck, Bellefontaine, and Raymond Kazusky, Jr., Chardon, both of Ohio, assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed Sep. 4, 1979, Ser. No. 71,823

Int. Cl.³ B27B *27/10*

U.S. Cl. 83—435.1 **9 Claims**



1. In combination with a power saw of the type having a generally rectangular flat-topped horizontal worktable with a cutting blade projecting through an opening therein, said worktable being mounted upon a rigid cabinet-like base, an extension assembly for handling long workpieces attached to one side of said worktable; said extension assembly comprising, guide rail mounted to said worktable by a plurality of brackets, an extended work supporting member slidable along said guide rail parallel to the plane of said cutting blade, guide means adjustably positioned on said work supporting member for engaging an edge of said long workpiece, clamp means for retaining said workpiece in fixed relation to said guide means and said work supporting member during the cutting operation and a pivot arm sub-assembly for supporting the end of said work supporting member remote from said guide rail.

4,248,116

GUARDS FOR CUTTING INSTRUMENTS

Reinhards Vitols, Tollerton, England, assignor to National Research Development Corporation, London, England

Filed Aug. 31, 1979, Ser. No. 71,571

Claims priority, application United Kingdom, Sep. 5, 1978, 35583/78

Int. Cl.³ D06H *7/00*; B26D *7/22*

U.S. Cl. 83—544 **9 Claims**

9. A cutting instrument comprising:

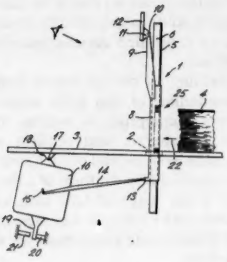
a moving cutting blade;

a toothed comb-like member mounted alongside said blade;

means to vibrate said toothed member cyclically;

points presented by the teeth of said comb-like toothed

member, the mode of said cyclical vibration being such that said points lie slightly proud of said moving blade at at least one moment in said cycle of vibration;



a working surface over which work may be caused to slide to approach said blade and said toothed member, and a hole formed in said working surface, said moving blade and said toothed member extending on both sides of said working surface and passing through said hole.

4,248,117

DIE STAMPING AND SCORING DEVICE, AND PROCESS FOR THE MANUFACTURE THEREOF

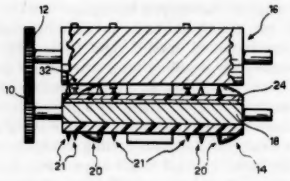
Aldo Bugnone, Via Bellini 2, Turin, Italy

Filed Jul. 5, 1978, Ser. No. 922,138

Claims priority, application Italy, Jul. 13, 1977, 68634 A/77

Int. Cl.[3] B26D *3/08*; B26F *1/20*

U.S. Cl. 83—863 **1 Claim**



1. A die stamping device comprising a die stamp cylinder, a pressure cylinder positioned to cooperate with said die stamp cylinder and means for driving said die stamp cylinder and said pressure cylinder to rotate in opposite directions from one another, whereby laminar material to be die stamped can be passed between said two cylinders, said die stamp cylinder including a metal core, a removable tubular unitary plastic sleeve surrounding said core, means defining a plurality of openings in said sleeve, blade means secured in said openings and means detachably securing said sleeve to said core for rotation therewith whereby said sleeve is interchangeable on the same core for other sleeves having differently positioned openings for different blades; said blade means include cutting blades having a predetermined external diameter and scoring blades having a diameter less than the diameter of the said cutting blades and further comprising blocks of yielding material on the surface of said pressure cylinder in opposition to said scoring blades.

4,248,118

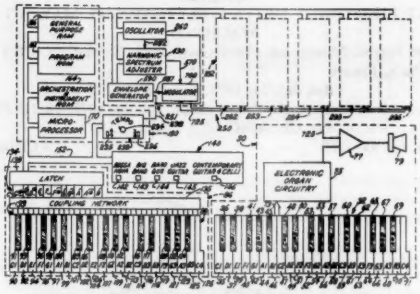
HARMONY RECOGNITION TECHNIQUE APPLICATION

George R. Hall, Sherman Oaks, and Robert J. Hall, Chatsworth, both of Calif., assignors to Norlin Industries, Inc., Deerfield, Ill.

Filed Jan. 15, 1979, Ser. No. 3,586

Int. Cl.[3] G10H *1/38, 5/00*

U.S. Cl. 84—1.01 **2 Claims**



1. A process for identifying the chord type and root represented by the actuation of one or more playing keys of a musical instrument keyboard capable of representing a group of chord types based on a group of roots, each of the playing keys corresponding to at least one note, said process employing a multiple-element register and multiple-location memory and comprising the steps of:

creating with respect to each chord type desired to be recognized a plurality of playing key pattern representations;

storing each playing key pattern representation in a memory location having an address representing the chord type corresponding to the playing key pattern representation;

generating a note signal corresponding to each note represented by an actuated key irrespective of the octave in which the note is pitched;

loading into the register a multi-bit data representation of the note signals;

rotating the data loaded into the register until one bit of the data corresponding to an actuated key is shifted into a predetermined element of the register;

storing a shift signal corresponding to the number of times the data is rotated;

comparing the data resulting from the rotation of the one bit into the predetermined element with the stored playing key pattern representations until a match is located;

deriving a chord type signal from the address of the playing key pattern representation resulting in the match; and

deriving a root signal from the value of the shift signal, whereby the chord type signal and root signal are available for the synthesis of music.

4,248,119

ELECTRONIC MUSICAL INSTRUMENT PROVIDING CHORD TONES IN JUST INTONATION

Shigeru Yamada, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Nov. 9, 1979, Ser. No. 92,984

Claims priority, application Japan, Nov. 13, 1978, 53/140294

Int. Cl.[3] G10H *1/38, 5/00*

U.S. Cl. 84—1.01 **7 Claims**

1. An electronic musical instrument comprising:

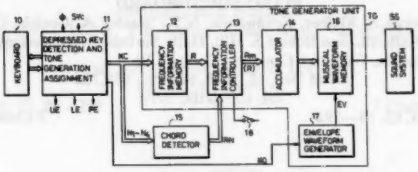
keybord keys;

first means, cooperatively connected to said keyboard, for providing musical tones corresponding to depressed keys and having frequencies of an equally tempered scale;

second means, cooperatively connected to said keyboard,

for detecting a chord according to a combination of depressed ones of said keys; and

third means, connected to said first means and to said second means for automatically causing said first means to modify



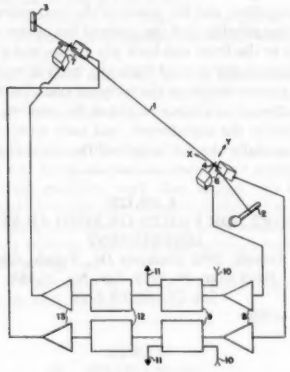
the frequencies of chord constituent tones other than root note tones of the chord in respective amounts that bring the frequencies of said modified chord constituent tones to just intonation relationship with said root note tone.

4,248,120

STRINGED MUSICAL INSTRUMENT WITH ELECTRICAL FEEDBACK

Stewart Dickson, R.D. 2 Box 409, Hockessin, Del. 19707

Filed May 29, 1979, Ser. No. 43,343
Int. Cl.[3] G10H *3/00*
U.S. Cl. 84—1.16 **1 Claim**



1. A single string in the configuration of a harmonically resonant delay line which can be manipulated as an acoustically active musical instrument and set into vibration without the necessity of an external signal, in which the string is of length thirty to one hundred feet or more, held taught between a tuning peg and a stationary peg, supported at one end by a pickup transducer assembly and at the other end by a driving transducer assembly;

having electrical connections from said pickup transducer assembly to a means for producing echo or sustain effects on the string comprising a series of electronic signal-processing devices and possible external signal source comprising at least:

a preamplifier which increases the signal from said pickup transducer assembly to a level which can be processed by subsequent electronic devices;

a mixer which;

receives the signal from said preamplifier and the signal from an external source,

mixes the signal from said preamplifier with said signal from said external source,

delivers a first output signal which can be amplified and heard through a loudspeaker,

delivers a second output signal which functions as a feedback signal,

controls the volume of the signal from said preamplifier, from said external source, and said first and second output signals;

an equalizer which electrically filters and thereby controls the harmonic content of said feedback signal;

a power amplifier which receives a filtered feedback signal from the equalizer, amplifies said filtered signal, and feeds it to the said driving transducer assembly;

in which a preferred embodiment is one in which the said stationary peg and said driving transducer assembly are mounted on a single frame and the pickup transducer assembly and tuning peg are mounted on a second similar frame a large distance, corresponding to the freely vibrating string length of thirty to one hundred feet or more, away from the first said frame;

in which a novel improvement on said instrument of a delay-line nature is one in which the driving transducer assembly and pickup transducer assembly each comprise a pair of driving transducers and pickup transducers, respectively, oriented in such a way as to translate energy to and from the string in directions lying in two orthogonal planes intersecting along the axis of the string, resulting in transverse modes of vibration in each of the said orthogonal planes, resulting further in a propogation of acoustic information along the string which can be recognized as existing in two distinct channels corresponding to each of the said orthogonal planes, each channel being driven by one of said pair of driving transducers and being picked up by a corresponding one of said pickup transducers;

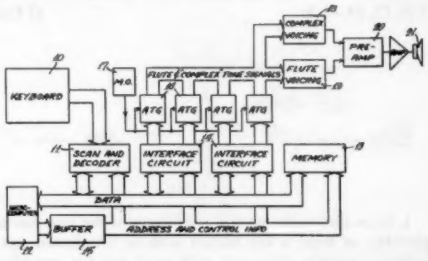
in which the series of electronic signal-processing devices as described is duplicated for each channel corresponding to each said direction of energy translation.

4,248,121

PULSE GENERATOR FOR PRODUCING THE HARMONIC EQUIVALENT OF A SAWTOOTH WAVE

Patrick S. Roberts, Rolling Meadows, Ill., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Aug. 31, 1979, Ser. No. 71,096
Int. Cl.[3] G10H *1/12, 5/12*
U.S. Cl. 84—1.19 **16 Claims**



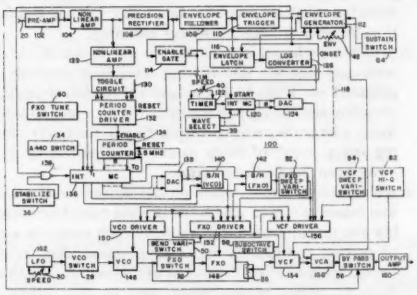
1. In an electronic musical instrument having means for selecting any one of a pluraltiy of different pitch musical tones to be produced, a system for producing said selected tone comprising:

means for generating a narrow duty cycle rectangular pulse train having a frequency proportional to and a duty cycle varying directly with the pitch of the selected tone, said duty cycle being equal to or less than 50% to cause the harmonic spectrum of said pulse train to be substantially flat over the audible range.

4,248,122
MUSIC SYNTHESIZER

Donald L. Tavel, 233 W. Westfield Blvd., Indianapolis, Ind. 46208

Filed Jun. 7, 1979, Ser. No. 46,199
Int. Cl.[3] G10H *1/12*
U.S. Cl. 84—1.19 **50 Claims**



1. In a music processing unit, responsive to an input signal representing a musical sound, said input signal being a bipolar signal of a defined frequency within a defined varying envelope amplitude, said synthesizer including means responsive to said input signal for providing a first signal related to said amplitude, means responsive to said input signal for providing a second signal at a frequency related to said defined frequency, the improvement comprising

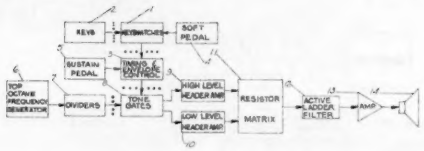
means responsive to said first signal for providing a waveshape having a magnitude related to said first signal; and

voltage controlled filter means for filtering said second signal, said waveshape being applied to said filter means to control a filtering characteristic of said filter means.

4,248,123
ELECTRONIC PIANO

David A. Bunger, and Dale M. Uetrecht, both of Cincinnati, Ohio, assignors to Baldwin Piano & Organ Company, Cincinnati, Ohio

Filed Apr. 25, 1979, Ser. No. 33,096
Int. Cl.[3] G10H *1/12, 5/00*
U.S. Cl. 84—1.26 **12 Claims**

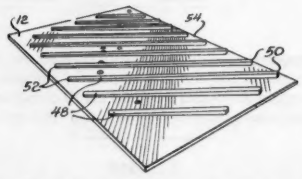


1. In an electronic musical instrument of the type having a plurality of keys, a key switch with an unactuated and an actuated position associated with each key for providing a control voltage when said key is actuated, a source of tone signals, and a plurality of tone gate circuits each tone gate circuit associated with an individual key switch for combining one or more of said tone signals under control of said control voltage to produce a pair of output signals, the improved means for emulating piano tones in combination therewith comprising first and second header amplifiers responsive to some at least of said tone gate outputs, said first header amplifier passing a first range of signal amplitudes, said second header amplifier passing only a second range of signal amplitudes greater than a predetermined non-zero threshold, and means connecting outputs from a plurality of tone gate circuits to each of said first and second header amplifiers.

4,248,124
PIANO SOUNDBOARD

George S. Klaiber, Tonawanda, N.Y.; Stanley A. Grajek, DeKalb, Ill., and Robert S. Hill, Holly Springs, Miss., assignors to The Wurlitzer Company, DeKalb, Ill.

Filed Dec. 15, 1978, Ser. No. 969,722
Int. Cl.[3] G10C *3/06*
U.S. Cl. 84—192 **3 Claims**

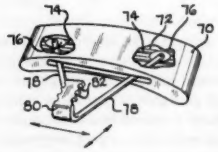


1. A piano soundboard construction of substantially uniform thickness throughout and consisting of three plies only of wood bonded together, the front and back plies being of equal thickness and the center ply being of greater thickness than the sum of front and back ply thicknesses, the thickness of the center ply being less than twice the thickness of the front and back plies together, and the grains of the two outer plies being parallel to one another and the grain of the center ply being at right angles to the front and back ply grains, and a plurality of parallel diagonal ribs on said back ply, each of said ribs tapering from a greater height at the terminal end closest to the top of the soundboard to a lesser height at the terminal end closest to the bottom of the soundboard, and each terminal end presenting substantially the full height of the rib at that end.

4,248,125
SUPPORT FOR VIOLIN OR SIMILAR STRING INSTRUMENT

Charles H. Everett, 2502 Kimberly Dr., Toledo, Ohio 43615

Filed Mar. 19, 1979, Ser. No. 21,453
Int. Cl.[3] G10D *3/18*
U.S. Cl. 84—280 **11 Claims**



1. A shoulder support for a violin and similar string instruments comprising, in combination,

shoulder pad means for supporting the violin having an outwardly extending arm, a substantially rigid plate disposed therein and a movable interconnection joining said plate and said arm,

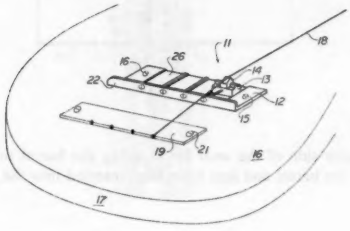
said movable interconnection including at least one bushing means for slidably and rotatably interconnecting said plate and said arm, and

an elongate mounting member having a pair of spaced apart means for selectively securing said mounting member to a peripheral edge of a string instrument,

said mounting member defining an arm receiving aperture, further defining a passageway intersecting said aperture,

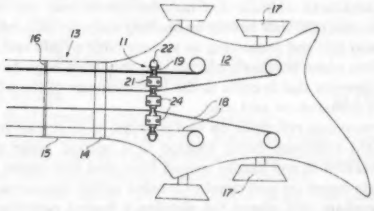
and including spring biased detent meand disposed within said passageway for frictionally engaging said arm.

4,248,126
ADJUSTABLE BRIDGE
Thomas G. Lieber, 9 E. Valley Stream Blvd., Valley Stream, N.Y. 11580
Filed Jan. 22, 1980, Ser. No. 114,225
Int. Cl.³ G10D *3/04*
U.S. Cl. 84—299 **7 Claims**



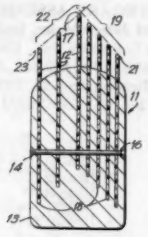
1. An adjustable bridge for guitars comprising:
(a) a panel extending under the guitar strings adjacent the lower ends thereof and being substantially parallel to the upper surface of the guitar body,
(b) means for securing the panel to the guitar body and allowing the panel to be manually raised or lowered above the guitar body,
(c) a sliding member disposed on the panel beneath each guitar string, with each sliding member being adapted for individual sliding movement on the panel under and along a string,
(d) a string contacting member connected above each sliding member and being adapted for movement laterally across each sliding member, such that strings can be moved individually in either direction across the guitar fretboard, with the sliding members allowing adjustment of the point of contact between the string contacting member and an individual string, and
(e) means for arresting movement of the string contacting member on each sliding member.

4,248,127
STRING NUT
Thomas G. Lieber, 9 E. Valley Stream Blvd., Valley Stream, N.Y. 11580
Filed Jan. 22, 1980, Ser. No. 114,222
Int. Cl.³ G10D *3/12*
U.S. Cl. 84—314 N **6 Claims**



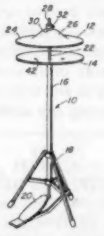
1. A string nut for guitars comprising a plurality of rollers secured across the upper face of the peghead adjacent the neck and in alignment with the guitar strings, the rollers being spaced slightly above the peghead with the strings running under the rollers, the rollers further having their cylindrical axes substantially parallel to the guitar frets, such that when the strings are pressed down immediately above the string nut and released they will easily slide back to their original position.

4,248,128
GUITAR PICK ARRAY
Laurence Des Gaines, 2027 Natalie Blvd., Seaford, N.Y. 11703
Filed Sep. 28, 1979, Ser. No. 53,332
Int. Cl.³ G10D *3/16*
U.S. Cl. 84—322 **10 Claims**



1. Guitar pick array for producing an improved tone from a guitar, comprising a plurality of spaced-apart individual planar picks, each of said individual picks having a tip and a base, and handle means having a receiving end, the base of each of said individual picks being held in said receiving end with the planes of said picks parallel to each other and said tips lying along two lines making an angle of about 75° to 105° with each other and each of said lines making an angle of from 30° to 60° with the planes of said picks.

4,248,129
HI HAT CYMBAL
Robert Zildjian, Meductic, Canada, assignor to Avedis Zildjian Company, Accord, Mass.
Filed Jan. 31, 1979, Ser. No. 7,891
Int. Cl.³ G10D *13/06*
U.S. Cl. 84—422 R **2 Claims**



1. For use with a Hi Hat cymbal arrangement including means for loosely supporting a lower cymbal so as to permit rocking movement including a flat collar means mounted on a support rod, and means for loosely supporting an upper cymbal above said upper cymbal, responsive to a control means so that said upper cymbal may be brought down to meet said lower cymbal by operation of said control means, and an upper cymbal having a central cup portion:
a substantially lens-shaped lower cymbal having a central opening substantially larger than said support rod to permit said rocking movement and, a substantially flat central portion for resting firmly on said flat collar means when

struck by said upper cymbal during operation of said cymbal arrangement,

said lower cymbal defining a plurality of circumferential spaced substantially small holes through said cymbal for the release of air trapped between said cymbals during operation of said cymbal arrangement,

said holes being located equal distances from the center of said lower cymbal, less than one-half the radius of said cymbal from said center.

4,248,130

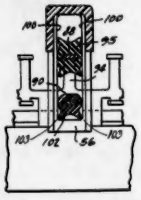
KEYBOARD ASSEMBLY

Norman Erickson, and James Meier, both of Des Plaines, Ill., assignors to Norlin Industries, Inc., Lincolnwood, Ill.

Continuation-in-part of Ser. No. 699,946, Jun. 25, 1976, Pat. No. 4,128,035. This application Aug. 24, 1978, Ser. No. 936,360

Int. Cl.³ G10C *3/12*

U.S. Cl. 84—434 **6 Claims**



1. For use in a musical instrument having a keyboard with a plurality of keys, at least some of said keys each having a pair of side walls separated by an interior space, the combination comprising a fixed bracket having a plurality of first projections, a plurality of first resilient members each supported on one of said first projections within said interior space and adapted to guide said side walls in up and down movement, said bracket having a plurality of second projections vertically aligned with said first projections, and a plurality of second resilient members supported on said second projections for limiting the up and down movement of said keys in at least one direction, said first and second projections being integral with said bracket, said keys being each provided with a horizontal web integrally formed with said two side walls and connected therebetween below said second resilient member, whereby upward movement of said key is limited by engagement of said web by said second resilient member, said second resilient member having a plurality of downwardly extending projections for engaging said web and stopping upward movement of said key without producing any audible sound.

4,248,131

FASTENING DEVICE

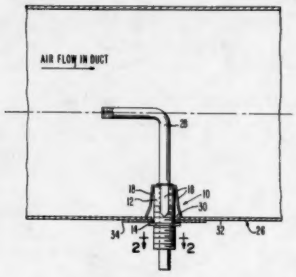
Harold D. Larro, 16376 SW. 72nd Ave., Tigard, Oreg. 97223

Filed Feb. 28, 1979, Ser. No. 16,220

Int. Cl.³ F16B *13/08*; F16L *5/00*

U.S. Cl. 411—15 **1 Claim**

1. A fastening device comprising: an elongated barrel for carrying an elongated part which is to be mounted to a wall with the part extending through a hole in the wall; a number of resilient legs coupled to the barrel adjacent to one end thereof and extending outwardly therefrom, the legs being bendable into positions contiguous to the barrel when the barrel and legs are to be inserted into the hole in said wall; the legs being capable of springing outwardly after the barrel and the legs have been inserted into the hole so that the ends of the legs will be engagable with one side of the wall surrounding the hole, said barrel having a threaded outer surface portion near the opposite end thereof; and a nut threadably engagable with said outer surface portion of the barrel, said nut adapted to be moved along the barrel and into coupled relationship with the



opposite side of the wall for securing the barrel to the wall after the barrel and legs have been inserted into the hole.

4,248,132

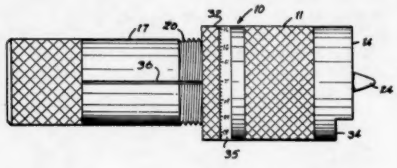
BULLET SEATING DEPTH GAUGE

Harold K. Blomseth, 69016 McMullin Dr., Bend, Oreg. 97701

Filed Nov. 5, 1979, Ser. No. 91,349

Int. Cl.³ F42B *35/02*

U.S. Cl. 86—24 **18 Claims**



1. A gauge for comparing the assembled length of a loaded cartridge case and bullet between the outer end of the cartridge case and an intermediate position on the bullet nose in relation to the longitudinal chamber length of a rifle between its bolt face and the leading edges of the lands in its barrel, comprising:

a member having a recess formed about a longitudinal axis;

a transverse wall on said member across one end of said recess, said wall having an opening therein centered about said axis and presenting an arcuate edge to said recess in a first plane perpendicular to said axis, said edge having a diameter that is equal to the land diameter of the rifle and is centered on said axis;

a transverse reference on said member at its remaining end, said reference being located in a second plane that is parallel to and axially spaced from said first plane; and

guide means on said member located within the recess intermediate said planes for aligning a loaded cartridge case and bullet coaxially along said longitudinal axis with the bullet nose extended into said opening and resting against said arcuate edge;

whereby a comparison can be made between the resulting longitudinal location of the outer end of the cartridge case and the transverse reference on said member.

4,248,133

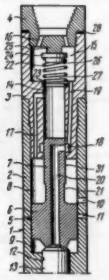
IMPACT MECHANISM

Vadim D. Petukhov, ulitsa Kropotkina, 127, kv. 493; Viktor A. Gaun, ulitsa Gogolya, 21a, kv. 14, and Oleg I. Bobrov, ulitsa Olgi Zhilinoi, 71, kv. 48, all of Novosibirsk, U.S.S.R.

Filed Nov. 14, 1977, Ser. No. 850,941

Int. Cl.³ F01L *21/02*; F01B *25/02*

U.S. Cl. 91—20 **5 Claims**



1. An elongated impact mechanism of the type operated with gaseous fluid under pressure fed from a source of gaseous fluid comprising: a casing having an inner cylindrical space including a distribution zone; a piston including internal passage means accommodated in said cylindrical space for reciprocation, said piston dividing said space into a work stroke chamber and an idle stroke chambr; gaseous fluid distribution means in said casing and cooperating with said internal passage means for connecting said chambers to said source of gaseous fluid for ensuring reciprocations of said piston under the action of said fluid; a resilient valve comprising spring means having internal and external sides, said spring means being coaxial with said piston and being actuated solely by gaseous fluid externally and internally of said valve acting on said sides, and said valve being provided in said distribution zone over an inlet port of one of said chambers for admitting gaseous fluid under pressure to said work stroke chamber, the valve comprising compression spring means mounted coaxially with said inlet port of said work stroke chamber and having one free extremity and the other extremity which is retained in place in a recess of said fluid distribution means over said inlet port, gaseous fluid under pressure being admitted to said work stroke chamber through gaps between the turns of said spring means when said spring means is expanded, and the admission of said fluid is interrupted when the spring means is compressed, and the turns of said spring means are juxtaposed each other closing the gaps between the turns of said spring means, and a working implement adapted to be received in said casing and operated by said piston.

4,248,134

RESET MEANS FOR FLUID CONTROL CIRCUIT

William J. Spivey, Jr., Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Sep. 25, 1978, Ser. No. 945,262

Int. Cl.³ F15B *13/042*

U.S. Cl. 91—29 **16 Claims**

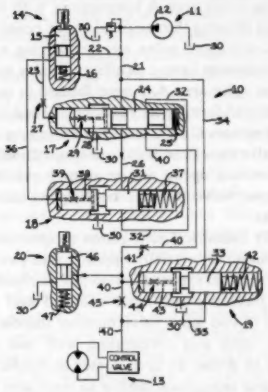
1. A fluid control circuit (10) comprising:

fluid source means (11) for being placed in a deactivated or activated condition of operation for discharging pressurized fluid therefrom upon activation thereof,

control valve means (14), including a single two-position directional control valve, for movement between first and second positions and connected to said source means for receiving pressurized fluid therefrom,

an actuator (13),

relay means (17,18,19), interconnecting said source means (11), said control valve (14), and said actuator (13), for requiring return of said control valve to its first position and then movement to its second position before pressurized fluid can be communicated to said actuator from said fluid source means by sequentially (A) preventing communication of pressurized fluid from said source means to said actuator upon activation of said source means and when said control valve means is maintained in its first position, (B) communicating pressurized fluid from said source means to said actuator upon continued activation of said source means and when said control valve means is



moved from its first position to its second position, and (C) preventing communication of pressurized fluid from said source means to said actuator when said source means is deactivated and then reactivated with said control valve means being maintained in its second position, and

additional control valve means (20) for selectively overriding said relay means, when said first-mentioned control valve means is maintained in its second position, for preventing communication of pressurized fluid from said source means to said actuator.

4,248,135

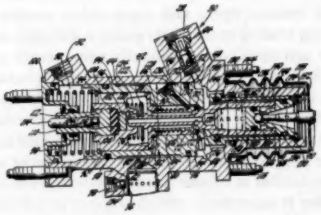
HYDRAULIC RATIO CHANGING BOOSTER

Denny L. Peeples, Dayton, and Donald M. Flory, Arcanum, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 22, 1979, Ser. No. 13,881

Int. Cl.³ E15B *13/10*; F15B *17/02*

U.S. Cl. 91—49 **3 Claims**



1. In a hydraulic ratio changing hydraulic booster having a housing, said housing having a bore therethrough, a power piston reciprocably mounted in said bore and defining therewith a power chamber and an exhaust chamber, a hydraulic pressure inlet connected to said power chamber to provide hydraulic fluid pressure to said power chamber, a hydraulic fluid outlet connected to said exhaust chamber, and open cen-

ter control valve means for controlling power pressure in said power chamber and providing controlled fluid communication between said power chamber and said exhaust chamber, the improvement comprising:

a first valve seat on said power piston forming a part of said open center control valve means and having an effective valve area A;

an input valve member movable in said housing and extending into said power piston and through said power chamber and having a first valve portion thereon having an effective valve area A cooperating with said first valve seat and defining therewith said open center control valve means, said input valve member having a second valve portion thereon having an effective valve area B at least as large as valve area A, a bore formed in said input valve member and forming a cylindrical section in one bore end having an area C different from valve area A and smaller than valve area B, an input end through which said cylindrical section opens, and an output end through which said input valve member bore opens into said exhaust chamber;

a generally cylindrical ratio piston reciprocably received in said housing bore axially opposite said power piston and having one end exposed to said power chamber, said ratio piston receiving said input end and said second valve portion of said input valve member therein and having a second valve seat cooperating with said second valve portion to define an open center hydraulic ratio control valve, said ratio piston having an inner area D larger than area B, and further having an outer area E larger than area D;

said power piston and the portion of said housing bore receiving said power piston having an area F larger than area E, said power piston having an output member connected to be movable therewith;

an input member formed as a stepped piston with a forward end having an area C and extending into said input valve member bore end having an area C, a rear end having an area D and extending into said ratio piston inner area D and also being axially engageable with said input end of said input valve member;

and an input push rod connected with said input member and movable to control said booster;

said input push rod being moved to actuate said booster, moving said input member and said input valve member to restrict or close said booster open center control valve means and cause a pressure increase in said power chamber acting to move said power piston and said output member while said open center hydraulic ratio control valve remains open, said input valve member further moving relative to said ratio piston a sufficient amount to close said open center hydraulic ratio control valve and trap hydraulic fluid within said ratio piston between said ratio piston and said input member and said input valve member, further movement of said input member in the booster actuating direction causing an increase in pressure in the trapped hydraulic fluid and movement of said input valve member at a faster rate than movement of said input member in accordance with the ratio of area D less area C to area B less area C, increasing the ratio of booster power output to input;

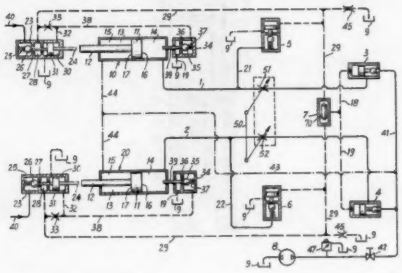
and, upon sufficient trapped fluid pressure being built up relative to power pressure in said power chamber, causing movement of said ratio piston toward said power piston and proportionally changing the booster ratio from a first ratio to a different ratio based on the ratio of trapped fluid pressure to power chamber pressure.

4,248,136

THRUST DEVICE USING HYDRAULIC JACKS

Guy Blanpain, Verneuil en Halatte, and Pierre Grandfils, Précy-sur-Oise, both of France, assignors to Charbonnages de France, Paris, France

Filed Aug. 7, 1978, Ser. No. 931,729
Claims priority, application France, Aug. 18, 1977, 77 25269
Int. Cl.[3] F01L *25/06;* F01B *7/18*
U.S. Cl. 91—305 **5 Claims**



1. A quasi-continuous thrust device, comprising:

a plurality of double-acting jacks, each including:

a cylinder slidably containing a piston having a working face defining with said cylinder a work chamber, and a resetting face defining with said cylinder a resetting chamber;

each piston being reciprocally slidable in the respective cylinder between a starting position in which the work chamber is minimized and an end-of-work stroke position in which the resetting chamber is minimized;

a hydraulic pump;

a plurality of pressurized hydraulic fluid supply pipes normally simultaneously supplied in parallel by said hydraulic pump, each being connected to a respective said working chamber of a respective said jack, so that each is normally supplied in parallel by said hydraulic pump;

controlled closure means for closing the respective supply pipes;

controlled venting means for venting the respective work chambers;

a respective bi-stable self-lock pilot device associated with each said jack, each including means for tripping the respective bi-stable self-lock pilot device to an active pilot position upon arrival of said piston of the respective jack at said end-of-work stroke position thereof;

a respective unlocking device associated with each said jack, operable upon return of said piston of the respective jack at said starting position thereof to unlock the respective bi-stable self-lock pilot device;

control means responsive to a respective bi-stable self-lock pilot device being in said active pilot position thereof, to control both said controlled venting means of the respective jack and the closure of said controlled closure means for the respective supply pipe;

respective pressurized hydraulic fluid supply means for each said resetting chamber, being operable at least when the respective bi-stable self-lock pilot device is in said active position thereof; and

additional closure means for isolating said work chambers by at least one circuit selector in response to any one of said self-lock pilot devices being placed in said active position thereof.

4,248,137

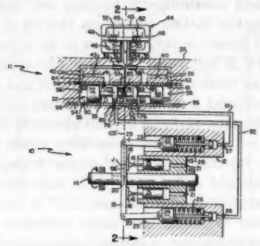
FEEDBACK MECHANISM FOR VARIABLE DISPLACEMENT HYDRAULIC DEVICE HAVING AN ELECTROHYDRAULIC CONTROLLER

John T. Caruso, Kenmore, N.Y., assignor to Moog Inc., East Aurora, N.Y.

Continuation of Ser. No. 869,829, Jan. 16, 1978, abandoned. This application Jul. 23, 1979, Ser. No. 59,650

Int. Cl.[3] F15B *9/09, 9/10;* F01B *13/02*

U.S. Cl. 91—375 R 11 Claims



1. In hydraulic apparatus having a pivotal load, having a fluid-operated mechanism for adjusting the pivotal position of said load, and also having a controller including an output stage having a movable spool member and a movable sleeve member arranged such that the relative positions of said members controls the flow of hydraulic fluid with respect to said mechanism, the improvement which comprises:

mechanical feedback means interposed between said load and one of said members and operative to produce axial and rotative movement of said member in response to pivotal movement of said load,

whereby pivotal movement of said load will cause follow-up movement of said one member to null said one member on the other of said members.

4,248,138

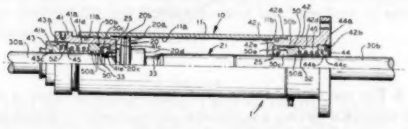
FAIL SAFE LOCKING MECHANISM FOR FLUID OPERATED VALVE ACTUATOR

Neil H. Akkerman, Kingwood, Tex., assignor to Baker CAC, Inc., Belle Chasse, La.

Filed Sep. 19, 1978, Ser. No. 944,050

Int. Cl.[3] F15B *15/26*

U.S. Cl. 92—27 1 Claim



1. In a fluid operated, double acting cylinder having a main cylinder, a piston head reciprocable therein, an actuating piston rod extending through an end wall portion of the main cylinder, and means for selectively supplying pressured fluid to said cylinder on opposite sides of said piston head to shift said piston head and rod to either of their extreme axial positions relative to the cylinder, the improvement comprising: means in said end wall portion of said main cylinder defining a secondary cylinder chamber in direct fluid communication with one end of said main cylinder; a locking piston mounted for reciprocable axial movements in said secondary cylinder chamber between a release position and a locking position, said locking piston being shiftable to said release position by pressured fluid supplied to the adjacent portions of said main cylinder; means on said piston rod defining a locking shoulder which is movable to a position adjacent said locking piston when said piston rod reaches its extreme axial position adjacent said end wall portion; freely shiftable locking means movable into locking relationship with said piston rod locking shoulder to prevent reverse movement of said piston rod from said extreme axial position; means on said locking piston for holding said locking means in locking position relative to said locking shoulder when said locking piston is in its said locking position; and means for shifting said locking piston to its said locking position whenever said locking means moves into engagement with said locking shoulder of said piston, thereby locking said piston rod in said selected extreme position, said main cylinder being provided with a second end wall portion axially spaced from the first mentioned end wall portion; means in said second end wall portion defining a tertiary cylinder chamber in direct fluid communication with the other end of said main cylinder; a second locking piston mounted for reciprocal axial movements in said tertiary chamber between a release position and a locking position; said second locking piston being shiftable to said release position by pressured fluid supplied to the adjacent portions of said main cylinder; means on said piston rod defining a second locking shoulder which is movable to a position adjacent said second locking piston when said piston rod reaches its other extreme axial position adjacent said second end wall portion; freely shiftable second locking means movable into locking relationship with said second locking shoulder to prevent reverse movement of said piston rod from its said other axial position; means on said second locking piston for holding said second locking means in locking position; and means for shifting said second locking piston to its said locking position whenever said actuating piston rod is shifted to its said other extreme axial position, thereby locking said actuating piston rod in said other extreme axial position, said secondary cylinder chamber and said tertiary cylinder chamber each having an annular configuration with said piston rod defining the inner wall thereof and said first and second locking pistons being respectively slidable on said piston rod in sealing relationship therewith.

4,248,139

MANUFACTURE OF FILTERS FOR CIGARETTES

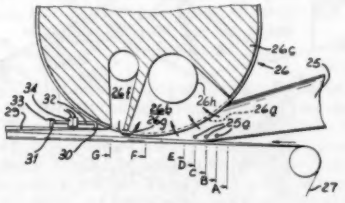
Francis A. M. Labbe, Neuilly-sur-Seine, France, assignor to Molins Limited, England

Continuation of Ser. No. 811,142, Jun. 28, 1977, abandoned. This application Feb. 28, 1979, Ser. No. 15,906

Claims priority, application United Kingdom, Jul. 2, 1976, 27583/76; Dec. 22, 1976, 53688/76

Int. Cl.[3] A24C *5/50*

U.S. Cl. 493—4 19 Claims



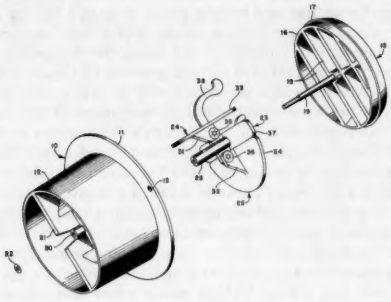
1. A machine for making cigarette filters from filter tow, including means for feeding filter tow towards a rod forming section; means for laterally compressing the filter tow to the cross-section of the finished rod, including a tongue which shapes and compresses the tow to the final cross-section; and means associated with the downstream end of the tongue for sensing the pressure drop through the tow in a region where the tow has nearly reached its final cross-section.

4,248,140

DUCT OUTLET

Herman M. Hendricks, 538 Flat River Dr., Lowell, Mich. 49331

Filed Dec. 20, 1978, Ser. No. 971,232
Int. Cl.[3] F24F 7/00
U.S. Cl. 98—41 R **5 Claims**



1. A duct outlet having a tubular housing, a grille rotatably mounted in one end of said housing, and damper means mounted within said housing, wherein the improvement comprises:

a beam bridging across said housing at the opposite end thereof from said grille, said beam having a bearing coaxial with the axis of said housing, said grille having an apertured face and an axial extension from said face coaxial with and received within said bearing;

a damper carrier having a central tubular portion telescopingly received over said grille axial extension and interposed between said beam and said grille face, and having at least one support bracket on a side thereof;

a damper pivotally mounted on said bracket, said damper having a control handle extending through an opening in said grille; and

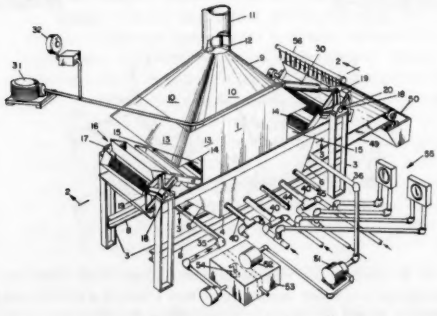
securing means maintaining the engagement of said grille axial extension in said bearing.

4,248,141

METHOD AND APPARATUS FOR DEBITTERING SOYBEANS

Harry W. Miller, Jr., 44 S. Main St., Fredericktown, Ohio 43019

Filed Aug. 18, 1978, Ser. No. 934,839
Int. Cl.[3] A23L 1/20; A23N 12/02
U.S. Cl. 99—483 **5 Claims**



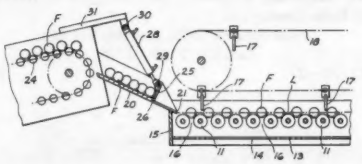
1. An apparatus for debittering soybeans and the like to destroy and extract the bitter taste therefrom comprising frame means, an open topped generally rectangular processing tank supported by said frame means, exhaust hood means arranged thereabove, inlet and discharge conduits for introducing and flowing water preheated to approximately 198° F. into and lengthwise through and from said tank, at least three vertically spaced treatment zones in said tank, spaced steam manifolds in each of said zones adjacent the bottom thereof, water injector conduits interposed between said steam manifolds, sprocket means on said frame at the inlet and discharge ends of said tank, chain conveyor means traveling over said sprockets and into and through said tank, a series of baskets for receiving soybeans to be treated on said conveyor means and depending downwardly therefrom, means for indexing said sprockets and successively and intermittently moving said baskets through and immersing the baskets and beans therein in the water in said treatment zones, injecting steam at an approximate temperature of 214° F. into the first zone so that steam will bubble up through and render the water turbulent and penetrate the skins of and expand and rupture the beans and destroy the enzymes on the outer surfaces thereof to enable the volatile oil and gases to escape with the exhausting steam through said exhaust hood, injecting water and steam through said water injector conduit and steam manifold in said second zone at a reduced temperature of approximately 212° F. as a filled basket enters that zone to render the water turbulent therein, and introducing water and steam through said water injector conduit and steam manifold in said third zone as a filled basket enters thereinto at the same temperature of approximately 212° F. as in said second zone whereby remaining volatile gases and oils will be released into the turbulent water therein and will be exhausted by the steam through said exhaust hood.

4,248,142

APPARATUS FOR EXTRACTING CITRUS PEEL OIL FROM WHOLE FRUIT

James E. McKinney, Jr., Winter Haven, Fla., assignor to Brown International Corporation, Covina, Calif.

Filed Jan. 2, 1979, Ser. No. 29
Int. Cl.[3] A23N 1/00; B65G 47/26
U.S. Cl. 99—509 **5 Claims**



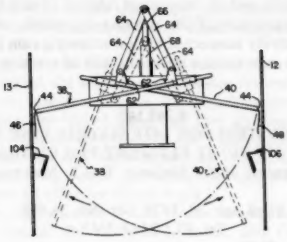
1. For use with a continuously operating conveyor, a citrus oil extractor having a horizontal series of power-driven parallel rotary toothed rolls defining pockets between them for reception of whole citrus fruit articles and penetration of the peel thereof, said series of rotary rolls extending from an entrance end to a discharge end of the oil extractor, a device operatively interposed between the conveyor and the oil extractor for delivering accumulated groups of whole citrus fruit articles into the entrance end of said oil extractor, means including a member movable between a first position causing accumulation of whole citrus fruit articles on the device to a second position causing mass movement of said accumulated group into the entrance end of the oil extractor, the mass movement of said accumulated group acting to sequentially transfer whole citrus fruit articles in the pockets toward the discharge end of the oil extractor, each citrus fruit article contacting and moving the fruit article in front of it, whereby the time of action of the toothed rolls against each whole citrus fruit article is regulated.

4,248,143

INTERLACING TWINE WRAPPING MECHANISM FOR ROTARY BALERS

Melvin V. Gaeddert, Newton, Kans., assignor to Hesston Corporation, Hesston, Kans.

Filed May 29, 1979, Ser. No. 43,504
Int. Cl.³ B65B *13/18*
U.S. Cl. 100—5 **3 Claims**



1. In a rotary baler having a baling chamber and means for spinning a cylindrical bale of material about its longitudinal axis within said chamber upon completion of a bale-forming process in the baler, mechanism for wrapping the completed and spinning bale with convolutions of twine to promote structural integrity of the bale, said mechanism including:

a pair of twine dispensing members each having a twine outlet from which a corresponding strand of twine may issue,

each of said members being shiftable in directions causing said outlets thereof to travel back and forth along the length of said bale chamber starting from a home position adjacent one end of the chamber, leading to a mid-cycle position adjacent the opposite end of the chamber and then returning to said home position,

the respective paths of travel of said members mutually overlapping one another;

means for driving said members in mutually opposite directions and to such an extent during and shifting that said members pass each other at approximately midlength of the chamber at least during said returning movement toward home position whereby to mutually interlace the twine strands; and

a pair of separate cutters so positioned on said baler as to be usable in severing the strands of twine from the outlets of their respective members after the bale has been wrapped by the strands and upon return of the members to said home positions thereof.

4,248,144

CAN CRUSHER HAVING TWO MOVABLE JAWS

Kenneth Morgan, 4707 Brooks St., Montclair, Calif. 91763

Filed Jun. 27, 1979, Ser. No. 52,451
Int. Cl.³ B30B *1/30, 9/32*
U.S. Cl. 100—244 **14 Claims**

1. A can crusher comprising:

a support housing;

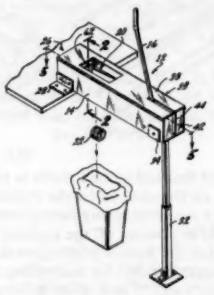
a first movable jaw means and a second movable jaw means both movably mounted in said support housing to move reciprocally between an initial position wherein said first and said second movable jaw means are spaced apart one from the other by a distance at least the length of a can to be crushed and a second position wherein said first and said second movable jaw means are spaced apart one from the other by a distance less than said initial distance so as to enable said first and said second movable jaw means to crush a can placed between said first and said second jaw means when said first and said second jaw means move from said initial position to said second position;

means for generating a mechanical force mounted in said housing and capable of being activated to generate said mechanical force;

a mechanical force transfer means operatively connected to said means for generating a mechanical force so as to transfer said generated mechanical force;

a mechanical force modifying means operatively connected to both said first movable jaw means and said mechanical force transfer means, said mechanical force modifying means modifying said mechanical force transferred to it by said transfer means to achieve a mechanical advantage and transferring said mechanical advantage to said first movable jaw means advantageously moving said first movable jaw means from said initial position;

said second movable jaw means operatively connected to said mechanical force transfer means and moving in response to a mechanical force transferred by said mechanical force transfer means;



said advantageous movement of said first movable jaw means initiating crushing of said can as said first movable jaw means moves toward said second position, said movement of said second movable jaw means crushing said can as said second movable jaw means moves to said second position;

said supporting housing having track means mounted thereon, said first movable jaw means and said second movable jaw means movably mounted in said track means;

said track means including a stopping means positioned in said track means proximal to said first movable jaw means so as to stop the travel of said first movable jaw means in said track means after said can has been initially crushed.

4,248,145

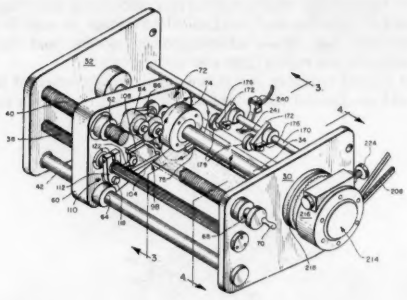
HIGH SPEED MARKING APPARATUS

Fred Patyk, 503 Kelly Ct, Lombard, Ill. 60148, and Elbert F. T. Wessman, P.O. Box 109, New Lenox, Ill. 60451

Filed Apr. 17, 1979, Ser. No. 30,890
Int. Cl.³ B41J *5/00*
U.S. Cl. 101—77 **29 Claims**

1. A high speed marking apparatus which is used with, and positioned at the exit end of, a high speed printing machine having a cylindrical printing plate on a rotatably driven shaft, said apparatus comprising a framework adapted to be mounted to the exit end of the machine, a first shaft rotatably journalled to said framework, indicia marking means axially adjustable on and rotatable with said first shaft for marking selected indicia on material exiting from the machine, said indicia marking means including indicia changing means for changing the indicia and actuating means for selectively actuating said indicia changing means to change said indicia after a selected number of revolutions of said first shaft, a second shaft rotatably journalled to said framework parallel to said first shaft, a third shaft, means for pivotally mounting said third shaft to said second shaft, an impression roller mounted on said third shaft, means for drivingly coupling said second shaft to said

third shaft, moving means for moving said impression roller between a lower retracted position and a raised position where a tangent on the cylindrical periphery of said impression roller is tangent with the circular path of travel of said indicia marking means whereby material exiting the machine is carried by said impression roller past said indicia marking means for the marking of indicia thereon, drive train means coupled between the driven shaft mounting the cylindrical printing plate of the printing machine and said first and second shafts of said appa-



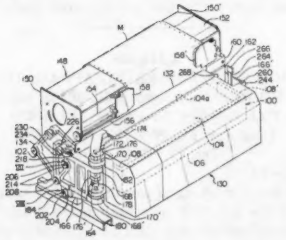
ratus for driving said first and second shafts in timed relationship to the printing on the material by the cylindrical printing plate, said drive train means including timing means for adjusting the time of, and the position of, the marking of indicia on the material relative to the time of printing on the material by the printing plate, control means for controlling the operation of the actuating means and of said roller moving means, and positioning means for adjusting the axial position of said indicia marking means on said first shaft.

4,248,146

IMPACT PRINTING APPARATUS HAVING PIVOTABLE FRAME STRUCTURES

Masao Miyasaka, and Tsuneki Kobayashi, both of Katsuta, Japan, assignors to Hitachi Koki Company, Limited, Tokyo, Japan

Filed Jun. 4, 1979, Ser. No. 45,440
Claims priority, application Japan, Jun. 6, 1978, 53-68498
Int. Cl.[3] B41J *7/92*
U.S. Cl. 101—93.03 **9 Claims**



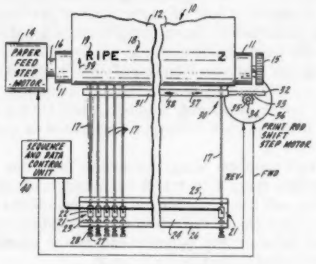
1. In an impact printing apparatus having a print line in a lateral direction of the apparatus and including a plurality of impact hammers arranged in a row substantially in parallel with said print line, the improvement comprising first and second frame structures positioned in a fore-and-aft direction of the printing apparatus, impact hammers operably mounted on one of said frame structures, a tiltable member positioned at one side of said first and second frame structures, first pivot means positioned at a side end of said first frame structure, said first pivot means operably pivotally interconnecting said first frame structure and said tiltable member about a generally vertical axis along said one side end of said first frame structure, second pivot means operably pivotally interconnecting said tiltable member and said second frame structure for pivoting movement about an axis substantially parallel with said print line and fixed with respect to said second frame structure, an eccentric cam mounted for rotation about an axis substantially parallel with said print line and being fixed with respect to said second frame structure, said eccentric cam being in slidable engagement with said tiltable member and upon rotation causing movement of said tiltable members and commensurate with fore-and-aft movement relative of said frames in a fore-and-aft direction of the printing apparatus, and control means operatively connected to said eccentric cam for driving the eccentric cam to turn about the axis of rotation thereof.

4,248,147

CONTROL SYSTEM FOR DOT MATRIX LINE PRINTER USING ONE PRINT ELEMENT PER CHARACTER

Walter J. Zenner, 10801 Highway E-R-3, Mukwonago, Wis. 53149

Filed Apr. 30, 1979, Ser. No. 34,645
Int. Cl.[3] B41J *3/12*
U.S. Cl. 101—93.05 **6 Claims**



1. In a dot matrix line printer that prints characters in a dot matrix of c columns and r rows, utilizing an input signal comprising a sequence of data words representing characters and auxiliary functions, the printer comprising n dot print elements aligned with a record sheet at n spaced character positions along a print line, n print element actuators, bidirectional column shift means for shifting the print elements forward and backward through a predetermined range of column positions along the print line, a clock signal source, single-line storage means for storing a series of data words representative of a line of n characters, a character signal generator, connected to the output of the single-line storage means, for translating each data word representative of a character into r·c dot position signals, and row scan means and column scan means, connected to the character signal generator, for scanning the character signal generator to supply the dot position signals to a single output circuit in a predetermined line-row-column sequence;

an improved control system in which:

the row scan means comprises a counter having r+1 effective stages;

the column scan means comprises a counter having c+1 effective stages;

and the column shift means comprises incremental shift means for shifting the print elements by predetermined discrete column width steps;

the improved control system further comprising:

line scan means, comprising a counter having n+1 effective stages, for connecting the dot position signal output circuit to each print element actuator in line sequence;

incremental sheet feed means for feeding the record sheet transversely to the print line in predetermined row width increments;

line sequence control means for applying the clock signal to

the single-line storage means and the line scan means to actuate those means to read out data words in line sequence from the single-line storage means to the character signal generator in synchronism width advancement of the line scan means by one stage for each data word representative of a character;

column scan control circuit means, connected to the line scan means, the column shift means, and the column scan means, for actuating those means to shift the print elements forward by one column increment, advance the column scan means one stage, and reset the line scan means each time the line scan means reaches an effective count of $n+1$;

row scan control circuit means connected to the column scan means, the sheet feed means, the column shift means, and the row scan means, for actuating those means to advance the record sheet one row increment, shift the print elements backward to the initial column position, advance the row scan means one stage, and reset the column scan means each time the column scan means reaches an effective count of $c+1$;

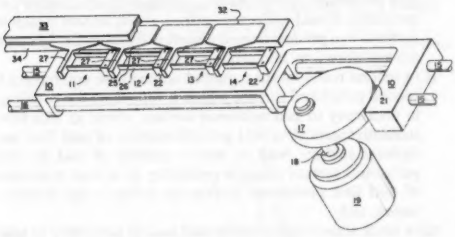
and line start control circuit means connected to the row scan means, the sheet feed means, and the single-line storage means, for actuating those means to advance the record sheet a predetermined number of row increments, clear the storage means, and reset the row scan means each time the row scan means reaches an effective count of $r+1$.

4,248,148

TIME SHARED SHIFTING PRINT HAMMER ASSEMBLY

Frank A. Mahoney, Wyncote, and Ronald W. F. Hutley, Lansdale, both of Pa., assignors to Sperry Corporation, New York, N.Y.

Filed Oct. 23, 1978, Ser. No. 953,378
Int. Cl.³ B41J *9/12*
U.S. Cl. 101—93.09 **7 Claims**



1. A movable print hammer assembly for a line impact printing mechanism in which each print hammer prints a plurality of columns of a line, said printing mechanism having a fixed base and horizontally moving type characters, the combination comprising:

a print hammer carriage slidably mounted on said fixed base to provide horizontal movement parallel to said type characters,

a plurality of print hammers mounted on said print hammer carriage for movement therewith, said print hammers being mounted in a horizontal plane and provided with independent movement transverse to said type characters, each said print hammer comprising:

a print hammer body,

a print hammer face at one end of said print hammer body, and

a flat energizible coil mounted on a fan-shaped circuit board at the other end of said print hammer body,

flexible support means having movable ends attached to said print hammer body and fixed ends attached to said print hammer carriage,

said flexible support means being arranged in the same horizontal plane as said print hammer bodies and spaced between adjacent print hammer bodies,

said print hammer faces being spaced in said horizontal plane a plurality of columns apart and being adapted to print characters in a plurality of columns,

a pair of bar magnets one on each side of said flat energizible coils, said magnets being fixed to said base and arranged parallel to each other and to said type characters to provide a continuous uniform air gap therebetween for receiving said energizible coils on said print hammer bodies,

drive means for imparting reciprocal movement to said print hammer carriage, and

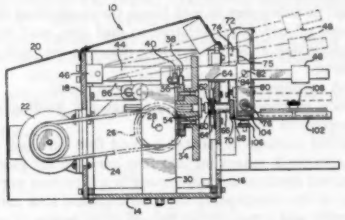
means for energizing said flat energizible coils in timed relationship to the movement of said type characters, whereby said print hammers are moved to engage a plurality of said moving type charactes in different column positions along each line to be printed.

4,248,149

SILK SCREEN PRINTING MACHINE

Jean-Louis Dubuit, 74 Bd Voltaire, Paris, France (75011)

Filed Aug. 21, 1978, Ser. No. 935,651
Int. Cl.³ B41L *13/18*
U.S. Cl. 101—123 **11 Claims**



1. In a silk screen printing machine wherein a screen on a supporting frame is mounted for engagement with an object to be printed, a squeegee is mounted for engagement with the screen when the screen is in engagement with the object, and means are provided for moving the screen and squeegee from their respective engagements, the improvement wherein the mounting for said squeegee comprises:

a pivoting arm on which the squeegee is mounted,

first drive means for pivoting said arm, said first drive means comprising a rotating cam, a second arm, a cam follower mounted on said second arm, said cam and cam follower operating to drive said second arm into contact with said pivoting arm for driving said pivoting arm, and

link means extending from said pivoting arm operatively connecting said pivoting arm to said frame for controlling the movement of said frame relative to said pivoting arm,

said link means comprising a horizontal rotatable shaft, track means positioned at each end of said shaft for maintaining the horizontal orientation of said shaft, cooperating means for connecting the ends of said shaft with said track means to allow movement of the shaft, and coupling means for transmitting movement of the pivoting arm to said shaft,

whereby said pivoting arm is driven by said first drive means to move said squeegee away from said screen with said pivoting arm's movement transmitted through the link means to said screen frame, causing the screen to simultaneously move away from said object.

8. In a silk screen printing machine wherein a screen on a supporting frame is mounted for engagement with an object to be printed, a squeegee is mounted for engagement with the screen when the screen is in engagement with the object, and means are provided for moving the screen and squeegee from

their respective engagements, the improvements wherein the mounting for said squeegee comprises:

a pivoting arm on which the squeegee is mounted,

frist drive means for pivoting said arm, said first drive means comprising a rotatable shaft, and including separate drive means mounted on said shaft for moving said screen frame during engagement with said object, a first carriage supporting said screen frame, a track receiving said first carriage, said separate drive means being connected to said first carriage for sliding said first carriage back and forth along said track, and

link means extending from said arm operatively connecting said pivoting arm to said frame for controlling the movement of said frame relative to said arm,

whereby said arm is driven by said driving means to move said squeegee away from said screen with said arm's movement transmitted through the link means to said screen frame, causing the screen to simultaneously move away from said object.

11. In a silk screen printing machine wherein a screen on a supporting frame is mounted for engagement with an object to be printed, a squeegee is mounted for engagement with the screen when the screen is in engagement with the object, and means are provided for moving the screen and squeegee from their respective engagements, the improvement wherein the mounting of said squeegee comprises:

a pivoting arm on which the squeegee is mounted,

first drive means for pivoting said arm,

link means extending from said arm operatively connecting said pivoting arm to said frame for controlling the movement of said frame relative to said arm, said link means comprising a cable extending between said arm and said frame,

a first carriage supporting said screen frame,

a track receiving said first carriage for guiding said first carriage in one direction,

a second carriage supported by said first carriage, and

separate track means on said first carriage for guiding said second carriage for movement in a direction perpendicular to the direction of movement of said first carriage,

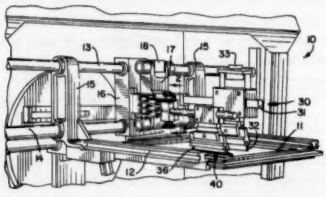
whereby said arm is driven by said drive means to move said squeegee away from said screen with said arm's movement transmitted through the link means to said screen frame, causing the screen to simultaneously move away from said object.

4,248,150

COMBINED SQUEEGEE AND FLOOD BAR FOR AUTOMATIC PRESSES

Louis A. Lala, Skokie, Ill., assignor to American Screen Printing Equipment Company, Chicago, Ill.

Filed Mar. 26, 1979, Ser. No. 23,714
Int. Cl.[3] B41F *15/44*
U.S. Cl. 101—123 **8 Claims**



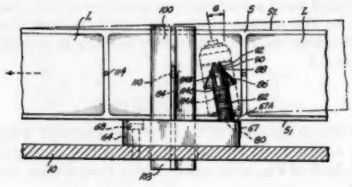
1. A squeegee and flood bar assembly for use with a printing press for the simultaneous opposite reciprocal movement of said squeegee and flood bar relative to a screen comprising a squeegee assembly mounted on a first mounting means for vertical movement, a flood bar, assembly mounted on said printing press independent of said squeegee assembly, said flood bar assembly comprising a flood bar depending from a rod, said rod supported in cantilever fashion by an outer support block, a leg member being attached to each of said inner and outer support blocks, the attachment being pivotal at least with said inner block, said leg member having an extended end portion beyond the pivotal attachment with said inner support block, a peg extending laterally from said first mounting means to a point spaced from said inner support block for contact with said extended end portion, said peg moving downward with the movement of said first mounting means and driving said extended end portion of said leg member downward, pivoting said rod and said flood bar upward for the print cycle and allowing said flood bar to drop downward onto the screen in the flood mode.

4,248,151

TAPE GUIDE PARTICULARLY USEFUL AS A PRINT STOCK GUIDE FOR IMPACT PRINTERS

Kenneth G. Real, Redmond, Wash., assignor to Interface Mechanisms, Inc., Lynnwood, Wash.

Filed Oct. 2, 1978, Ser. No. 947,461
Int. Cl.[3] B41F *1/08*
U.S. Cl. 101—288 **2 Claims**



1. A print stock guide for printing apparatus, said print stock guide comprising:

(a) a base having a substantially planar reference surface;

(b) a first roller means mounted on said base and having a first peripheral surface which is supported for rotation, in proximity to said reference surface, about an axis which is inclined in a predetermined direction by an angle θ from a normal drawn to said reference surface;

(c) a second roller means mounted on said base and having a second peripheral surface which is supported for rotation, in proximity to said reference surface, about an axis substantially parallel to said axis of rotation of said first peripheral surface, with at least a portion of said second peripheral surface being in proximity to at least a portion of said first peripheral surface to define a nip therebetween; and,

(d) a stock sensor supported in said base in proximity to said reference surface, said stock sensor including: first and second opposing, spaced-apart surfaces defining therebetween a slot which is aligned with said nip of said first and second peripheral surfaces; a light source disposed in said first surface of said stock sensor at a predetermined distance above said reference surface; and, a light sensor disposed in said second surface of said stock sensor at said predetermined distance above said reference surface and in opposing relationship to said light source.

4,248,152

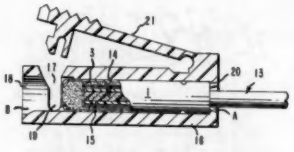
FIELD-CONNECTED EXPLOSIVE BOOSTER FOR PROPAGATING A DETONATION IN CONNECTED DETONATING CORD ASSEMBLIES CONTAINING LOW-ENERGY DETONATING CORD

Malak E. Yunan, Boonton Township, Morris County, N.J., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Filed Jan. 24, 1979, Ser. No. 6,013
Int. Cl.[3] C06C *5/00*
U.S. Cl. 102—27 F **30 Claims**

1. An explosive booster adapted to be fixedly connected to

donor and receiver detonating cords in the field and comprising first and second shells each closed at one end and open at the opposite end, said second shell being seated closed-end-innermost and coaxially within said first shell in a manner such as to produce a spacing between the closed ends of said shells and between their facing side walls, a granular high-velocity detonating explosive being present in the spacing between the side walls and closed ends of said shells, the explosive-containing spacing between said shells being sealed off from the atmosphere, and an open cavity extending from one end to the other of said second shell for receiving a detonating cord, said granu-



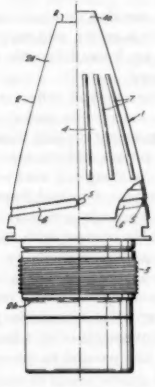
lar explosive being adapted to propagate a detonation from a donor detonating cord transversely positioned outside and adjacent to the closed end of said first shell to a receiver detonating cord positioned in the cavity in said second shell, or, conversely, from a donor detonating cord positioned in the cavity in said second shell to a receiver detonating cord transversely positioned outside and adjacent to the closed end of said first shell, when at least one of said donor and receiver cords is a low-energy detonating cord and an end-portion of the cord in said cavity is surrounded by said granular explosive in the spacing between the side walls of said shells.

4,248,153

COMBINATION FUZE FOR MISSILES

Kyrre Sjotun, and Tore Rognmo, both of Kongsberg, Norway, assignors to A/S Kongsberg Vapenfabrikk, Norway

Filed Dec. 6, 1978, Ser. No. 966,860
Claims priority, application Norway, Dec. 21, 1977, 774405
Int. Cl.³ F42C *11/00*
U.S. Cl. 102—208 **6 Claims**



1. A combination fuze for missiles for launching towards a target, comprising a current generator which is driven by a ram air operated means which has ram air supplied thereto through an inlet in the nose portion of the missile and which supplies electric energy to an electric firing circuit comprising an electric detonator and means which are adapted via the electric detonator to detonate the missile before it comes in physical contact with the target, and a mechanical percussion switch which is adapted to cause detonation of the missile upon impact of the missile on the target, wherein

the mechanicl percussion switch comprises a sting sensitive detonator including a pyrotechnical delay and being equipped with a metal foil, and a firing needle which is included in the electric firing circuit, these parts being adapted for relative movement between the firing needle and the sting sensitive detonator upon impact which induces a circuit configuration of the firing circuit that triggers the electric detonator,

an easily detachable nose jacket so adapted that when attached to the nose portion of the missile it completely or partly inactivates the electric firing circuit,

so that the fuze when having attached thereto a jacket which prevents the supply of ram air to the ram air operated means, functions as a percussion fuze with mechanical firing of the sting sensitive detonator, and

so that the fuze when having attached thereto a jacket which permits ram air to drive the ram air operated means for the supply of electric energy to the electric firing circuit, but which disconnects the proximity functions of the fuze, functions as a percussion fuze with electric firing of the electric detonator, and

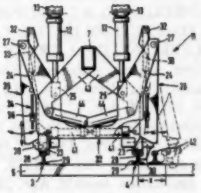
so that the fuze when having no jacket functions as a proximity fuze having a first electric percussion function and a second mechanical percussion function as further security for firing.

4,248,154

MOBILE TRACK TAMPING MACHINE WITH LIFTING AND LINING EQUIPMENT

Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed Feb. 21, 1979, Ser. No. 13,382
Claims priority, application Austria, May 11, 1978, 3446/78
Int. Cl.³ E01B *27/17, 29/04*
U.S. Cl. 104—7 B **12 Claims**



1. A mobile track tamping machine mounted for mobility on a track consisting of ties resting on ballast to be tamped and two rails fastened to the ties, the rails defining the track gauge and each one of the rails having a rail head and a rail base, the rails defining respective insides facing each other and outsides facing away from each other, including equipment capable of lifting and laterally moving the track in sections of the track where an additional rail extends closely adjacent the outside of one of the track rails, the track lifting and moving equipment comprising

(a) a support frame mounted on the machine for vertical and lateral movement relative thereto and to the track,

(b) power drive means for vertically and laterally moving the support frame to effect lifting and laterally moving the track,

(c) a pair of flanged wheels running on each one of the rails and supporting the support frame thereon for movement of the support frame along the track,

(1) the flanged wheels of each one of the pairs being spaced from each other in the direction of the rails and

(2) each one of the wheels having a flange arranged for engagement with the respective insides of the rails whereby the flanged wheels are adapted to serve as lining rollers upon lateral movement of the support frame,

(d) an elongated lifting tool mounted on the support frame

intermediate the flanged wheels of each pair of flanged wheels in the direction of the rails, each one of the lifting tools being associated with one of the track rails and being mounted for a pivotal operating movement in a vertical plane extending transversely to the track rails, each tool having

(1) a hook capable of selectively gripping the rail head and rail base of the associated track rail and of the additional rail at the outside thereof,

(e) additional power drive means for imparting to each one of the lifting tools the pivotal operating movement for selectively gripping the rail head and rail base of the associated track rail and the additional rail,

(f) a pivot mounting each one of the lifting tools on the support frame, the pivot extending in a direction substantially parallel to the longitudinal extension of the machine and being positioned a substantial distance from the hook which enables the hook of each lifting tool to move practically rectilinearly during the pivotal operating movement of the tools, and

(g) further power drive means for imparting to the hooks an additional motion in said plane transversely to the rectilinear movement of the hooks for selectively gripping the rail head and rail base.

4,248,155

METHOD FOR OBTAINING A CONTROLLED DEGREE OF BALLAST COMPACTION IN THE TAMPING AND LEVELING OF A TRACK

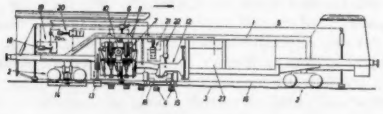
Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Division of Ser. No. 675,944, Apr. 12, 1976, Pat. No. 4,130,062, which is a continuation-in-part of Ser. No. 556,177, Mar. 6, 1975, which is a continuation of Ser. No. 438,264, Jan. 31, 1974, Pat. No. 3,910,195. This application Jun. 12, 1978, Ser. No. 914,678

Claims priority, application Austria, Apr. 26, 1973, 3742/73

Int. Cl.³ E01B *27/16*

U.S. Cl. 104—12 **4 Claims**



1. A method of leveling a track consisting of rails mounted on tie by jacking up the track and tamping ballast by vibratory pressure under the ties, the track being brought to a desired leveled position in relation to a reference system, comprising the combination of steps of

(a) simultaneously jacking and tamping the track,

(b) terminating track jacking before tamping has been completed, and

(c) continuing tamping after track jacking has been terminated and completing tamping after the desired leveled position of the track has been reached, the track being held under downward pressure at the desired leveled position under the control of the reference system in the region of tamping to prevent upward movement of the track above the desired level until tamping has been completed at a desired degree of ballast compaction.

4,248,156

AERIAL TRACKWAY TYPE TANSPORTATION SYSTEM WITH IMPROVED SPEED CONTROLLER

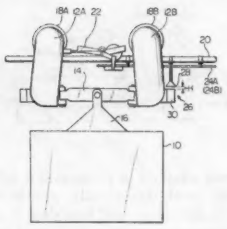
Yashuhisa Takeuchi, Yokosuka; Yukiyoshi Hatori, Tokyo, and Masatsugu Ohwada, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed May 19, 1978, Ser. No. 907,562

Claims priority, application Japan, Jul. 20, 1977, 52/86963

Int. Cl.³ B60L *5/08*

U.S. Cl. 104—300 **5 Claims**



1. A transportation system comprising, in combination:

an aerial trackway having first and second current carrying cables longitudinally extending along opposite sides of said trackway, said cables being arranged such that the distance between said first and second cables is substantially constant and said cables are substantially symmetric with respect to a vertical imaginary plane including the axis of said trackway, each of said cables being bent in vertical directions to have at least first and second sections which are parallel with said trackway, the distance between the axis of said trackway and an imaginary plane which includes the axes of said first sections of said first and second cables being different from that between the axis of said trackway and another imaginary plane which includes the axes of said second sections of said first and second cables;

a vehicle having a traction unit with a supporting wheel driven by an electric motor, said supporting wheel being disposed on said trackway to enable said vehicle to run along said trackway;

a current collector device, said collector device including a frame pivotally connected to said traction unit, a guide wheel rotatably mounted on said frame and disposed on said trackway to permit said current collector device to run with said vehicle along said trackway, first and second arms pivotally connected to said frame and respectively equipped at their free ends with current collecting shoes which are in slidable contact with said first and second current carrying cables, respectively, each of said arms being movable in accordance with a change of displacement of a corresponding cable with respect to said trackway upon movement of said means for providing synchronous swingable movements of said first and second arms about a common axis parallel to the rotation axis of said guide wheel; and

cable displacement sensing means for sensing the change of displacement of one of said cables with respect to said trackway to govern the power delivered to an apparatus of said vehicle to control the operation mode of said vehicle;

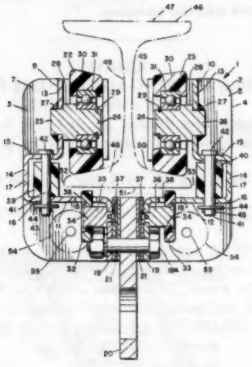
said current collecting device providing the synchronous movements with a structure comprising a rod bridging third and fourth arms, said third and fourth arms pivotally connected to said first and second arms, respectively, a second end of each of said third and fourth arms being pivotally connected to said frame.

4,248,157

CONVEYOR TROLLEYS

Maurice Evans, Kalamazoo, Mich., assignor to Aero-Motive Manufacturing Company, Kalamazoo, Mich.

Filed May 7, 1979, Ser. No. 36,741
Int. Cl.[3] B61B *3/00*
U.S. Cl. 105—154 **5 Claims**



1. A conveyor trolley for transporting articles longitudinally along an elongated, horizontally extending supporting rail having oppositely disposed upper and lower surfaces and oppositely disposed side surfaces, said trolley comprising

a. a housing comprising

(1) a front wall,

(2) a rear wall,

(3) two oppositely disposed side walls extending between and connecting said front and rear walls, and

(4) a bottom wall extending substantially horizontally inwardly from each of said sidewalls and terminating in downwardly extending flanges,

b. said front and rear walls having openings therethrough for the passage of such a rail through said housing during the movement of said trolley along said rail,

c. two pairs of upper wheels,

d. each of said pairs of upper wheels being

(1) rotatably mounted on respective ones of said sidewalls, and

(2) disposed in position to rest on laterally spaced, respective portions of said upper surface of such a rail,

e. two pairs of side wheels

f. each of said pairs of side wheels being

(1) rotatably mounted on respective ones of said sidewalls, and

(2) disposed in position to closely laterally overlie respective ones of said side surfaces,

g. two pairs of lower wheels

h. each of said pairs of lower wheels being

(1) rotatably supported by one of said downwardly extending flanges on said bottom wall, and

(2) projecting upwardly therefrom through an opening in said bottom wall in position to closely underlie laterally spaced respective portions of said lower surface of such a rail, and

i. means projecting downwardly from said bottom wall for supporting such an article to be transported along such a rail,

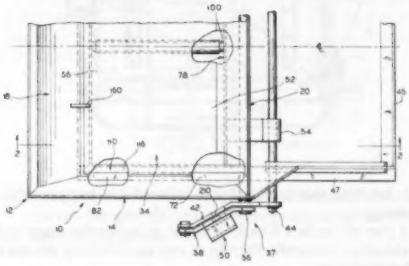
j. said wheels all having dielectric outer peripheral surfaces for electrically insulating said housing from such a rail.

4,248,158

RAILWAY HOPPER CAR GATE OUTLET ACTUATING MECHANISM

Osvaldo F. Chierici, Geneva, and Richard F. Murphy, Batavia, both of Ill., assignors to Holland Company

Filed May 14, 1979, Ser. No. 38,809
Int. Cl.[3] B61D *7/20, 7/22, 7/26;* **F16C** *29/00*
U.S. Cl. 105—282 R **14 Claims**



1. In a hopper outlet gate assembly for railroad hopper cars in which the car hopper has a discharge opening, with the assembly including a frame having four planar sheets in downwardly converging relation and forming a funneling portion terminating in an outlet port, a gate for closing the port, a slideway for the gate, which slideway extends sidewise and across the outlet port, and means for moving the gate longitudinally of the slideway between a first position in which it is disposed across the port to close same and a second position in which it is disposed to one side of the port and away from overlapping with the port to render the port fully open,

the improvement wherein:

said slideway comprises:

a pair of spaced apart parallel elongate side trackway members positioned at either side of the gate to support same,

and a third trackway member positioned across the outlet port intermediate said side trackway members,

said trackway members extending longitudinally of said slideway,

said side trackway members each having a liner extending therealong and interposed between the gate underside and the respective said trackway member on which the gate rides,

said third trackway member carrying a liner mounted on same for limited lost motion movement longitudinally of same on which the gate rides,

said liners being formed from a material of dry self lubricating characteristics,

and stop means for limiting said lost motion movement of said third trackway member liner in the outlet port opening movement direction of the gate,

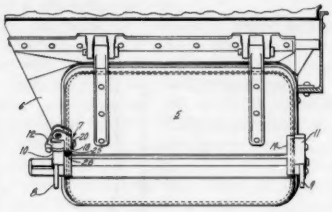
whereby when the hopper is loaded and the gate is moved in said direction by said moving means, said third trackway member liner has lost motion movement in said direction with said gate that is stopped by said stop means to overcome static friction between the gate and said third trackway liner for effecting sliding movement of the gate in said direction relative to said third trackway liner with further gate movement under said moving means in said direction to its outlet port open position.

4,248,159

PIVOTED RAILWAY HOPPER CAR DOOR LATCHING MECHANISM

James D. Hipp, Toledo, Ohio, assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Sep. 14, 1979, Ser. No. 75,693
Int. Cl.³ B61D *7/16, 7/22, 49/00*
U.S. Cl. 105—308 R **7 Claims**



1. A latching mechanism for a railroad car hopper door, comprising:

(a) a pair of catches fixedly secured adjacent the door and extending outwardly therefrom and sandwiching the door therebetween;

(b) a pair of latches carried by the door for interlocking engagement with the catches;

(c) means mounting the latches for unitary rotation into and out of interlocking engagement with the catches;

(d) a pawl carried by the hopper door for interlocking engagement with one of the pair of latches to hold the latches interlocked with the catches;

(e) means mounting the pawl for rotation into and out of interlocking engagement with one of the latches; and

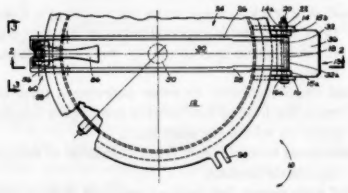
(f) a spring biased plunger carried by the hopper door for engaging the pawl when it is interlocked with the latch to aid in the prevention of rotation of the pawl out of interlocking engagement with the latch.

4,248,160

RAILWAY HATCH COVER AND STRAP LATCHING ASSEMBLY

John L. Carney, Jr., and John A. K. Krug, Jr., both of St. Charles, Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Mar. 12, 1979, Ser. No. 19,819
Int. Cl.³ B61D *17/12, 39/00;* **B65D** *45/08*
U.S. Cl. 105—377 **18 Claims**



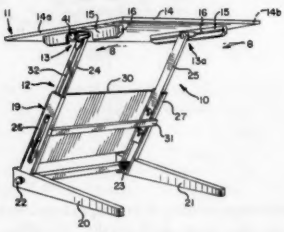
1. A hatch cover assembly comprising: a hatch cover pivotably mounted upon a hatch cover mounting bracket attached to a car roof; a hatch cover strap also pivotably mounted upon said hatch cover mounting bracket; and said hatch cover strap engaging the cover only at the center of the cover and at the distal end of the cover; said strap having a distal end portion which extends around the cover and engages the lower surface of the cover in closed position; a sealing gasket attached to one of the lower surface of said cover and a hatch coaming extending vertically up from the car roof; an over-center locking assembly pivotably mounted upon the car roof adjacent the distal end of said cover and said strap; said locking assembly being movable between an open position which allows the operator to pivot the cover and strap to open position, and an engaged position in which the locking assembly engages the strap in an over-center locked position; whereby in said locked position said locking assembly applies sealing pressure to the cover at the center of the cover only, and whereby said sealing pressure is transmitted through the cover to the periphery of the cover and to the seal to urge the seal into firm engagement with the cover and the coaming.

4,248,161

ADJUSTABLE LOCKING MECHANISM FOR TILTING TABLES AND THE LIKE

William A. Adair, Des Plaines, Ill., and Lyle A. Johnson, Spencer, Wis., assignors to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Sep. 22, 1978, Ser. No. 945,134
Int. Cl.³ A47F *5/12*
U.S. Cl. 108—6 **8 Claims**



1. In a locking mechanism for a tilting table of the type having a supporting frame, and a table top tiltably mounted on said frame, said locking mechanism being positioned between said top and said frame, the improvement in said locking mechanism comprising: four identical mating members having crown gear portions positioned on one side of each member around a central axis thereof for positive-locking multi-position meshing engagement with each other in pairs, and flange means on an opposing side of each said member for preventing rotational movement of said member relative at least one of said frame and said table top, and at least one position of possible meshing engagement between said mating members providing parallel alignment between said flange means and wherein said opposing side of each said member further includes an annular axially extending flange for preventing translational movement of said member relative at least one of said frame and said table top, and an interior of said annular flange defines a bearing surface coaxial with said crown gear portion.

4,248,162

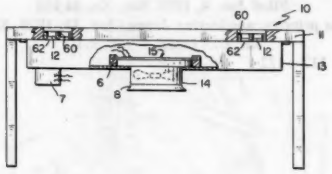
TABLE WITH ELECTROSTATIC AIR PURIFIER/CLEANER

S. Merrill Skeist, Glenhead, N.Y., assignor to Spellman High Voltage Electronics Corporation, Plainview, N.Y.

Filed Jul. 26, 1979, Ser. No. 60,895
Int. Cl.³ A47B *13/16, 37/00;* **F24F** *3/16*
U.S. Cl. 108—50 **7 Claims**

1. A table comprising a table top, said table having knee recesses so as to permit people to sit therearound to work and play, plenum chamber positioned below and connected to said table top, electrostatic precipitator means mounted in said plenum chamber, said table top having air entry grille means opening into the top surface thereof and in flow communication with said plenum chamber for capturing air containing tobacco smoke particles, fan means for directing the smoke

particle laden air into said plenum chamber and through said electrostatic precipitator means and diffuser means for recirculating cleaned air at low velocity from said plenum chamber to the area in which the table is located.

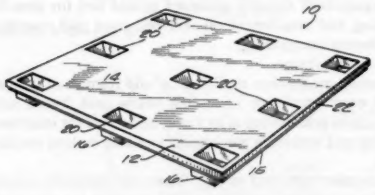


4,248,163

PALLET HAVING DENSIFIED EDGE AND METHOD OF MAKING SAME

Robert A. Caughey, Antrim, N.H.; Bruce A. Haataja, Lake Linden; Tauno B. Kilpela, Atlantic Mine; James F. Hamilton, Houghton, all of Mich., assignor to Board of Control of Michigan Technological University, Houghton, Mich.

Filed Dec. 21, 1978, Ser. No. 972,050
Int. Cl.³ B65D *19/24*
U.S. Cl. 108—53.3 **20 Claims**



1. A molded unitarily formed pallet comprising wood particles bonded together by a cured binder in compressed relation and forming: a deck having an upper supporting surface, a lower surface, and a peripheral edge, said peripheral edge being more highly compressed and having a density greater than the remainder of the said deck, and having greater strength and impact resistance than the remainder of said deck, and a plurality of integral leg sections extending downwardly from said deck for supporting said deck.

4,248,164

SLUDGE DRYING SYSTEM WITH SAND RECYCLE

Maynard C. Isheim, Menlo Park, Calif., assignor to Envirotech Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 895,684, Apr. 12, 1978, Pat. No. 4,153,411. This application Mar. 9, 1979, Ser. No. 18,389
The portion of the term of this patent subsequent to May 8, 1996, has been disclaimed.
Int. Cl.³ F23G *5/04*; F27B *9/22*
U.S. Cl. 110—225 **9 Claims**

1. A system to dry wet sludge with hot granular material and to burn the dry sludge comprising:

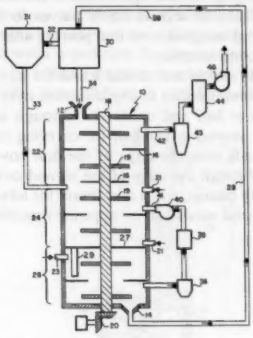
a. heating means to heat the granular material;

b. burning means coupled in gas flow communication with said heating means to burn dry sludge and to produce hot gases which are transferred to said heating means;

c. drying means coupled in communication with said heating means to receive hot granular material from said heating means and to receive wet sludge and to mix the hot granular material with the wet sludge to dry the wet sludge;

d. classifier means coupled to receive granular material and dry sludge from said drying means and to substantially separate the granular material from the dry sludge;

e. transfer means coupled to said classifier means to convey the dry sludge to said burning means; and,



f. second transfer means coupled to said classifier means to convey the granular material from said classifier means to said heating means.

4,248,165

METHOD AND APPARATUS FOR SEWING A COVER UPON A BALL CORE

Clarence A. Addy, 3128 Elmer St., and William C. Krizen, 2811 New England, both of, Sarasota, Fla. 33581

Filed Nov. 19, 1979, Ser. No. 95,875
Int. Cl.³ D05B *3/00*
U.S. Cl. 112—121.28 **21 Claims**

1. A method for sewing cover halves together around a ball core comprising the steps of:

providing a first needle for carrying a first thread through an aperture transversely extending therethrough and intermediate the ends thereof;

providing a second needle for carrying a second thread through an aperture transversely extending therethrough and intermediate the ends thereof;

providing a ball core with first and second cover halves to be sewn together positioned around the ball core;

advancing the first and second needles in one direction over an edge of the first cover half and under and through an edge of the second cover half for carrying the first and second threads over the edge of the first cover half and under and through the edge of the second cover half;

advancing said first and second needles in an opposite direction over the edge of the second cover half and under and through the edge of the first cover half for carrying the first and second threads over the edge of the second cover half and under and through the edge of the first cover half,

prior to said step of advancing the first and second needles in an opposite direction, holding the second thread between the first and second needles and above the first needle;

releasing the second thread upon passage of the first needle under the second thread; and

repeating said steps of advancing, holding and releasing for shuttling the first and second thread carrying needles back and forth over and under and through the edges of the first and second cover halves to create a regular herringbone stitch pattern between the first and second cover halves as the cover is sewn around the ball core.

11. An apparatus operable for sewing cover halves around a ball core comprising:

a frame;

a first needle having an aperture transversely extending therethrough and intermediate the ends thereof and for receiving a first thread;

a second needle having an aperture transversely extending

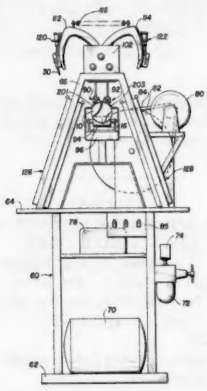
therethrough and intermediate the ends thereof for receiving a second thread;

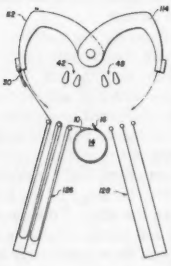
means operably connected to said frame for holding a ball core with first and second cover halves to be sewn together around said ball core in a posture adjacent to said first and second needles;

means operably connected to said frame for advancing said first and second needles in one direction over an edge of the first cover half and under and through an opposing edge of the second cover half for carrying the first and second threads over the edge of the first cover half and under and through the edge of the second cover half;

means operably connected to said frame for advancing said first and second needles in an opposite direction over the edge of the second cover half and under and through an opposing edge of the first cover half for carrying the first and second threads over the edge of the second cover half and under and through the edge of the first cover half, said first and second means for advancing being operable for carrying said first and second needles back and forth in a shuttle mode over and under and through the edges of the first and second cover halves; and

means operably connected to said frame for holding the second thread between said first and second needles and above said first needle when said first and second needles are advancing in an opposite direction to create a regular herringbone stitch pattern between the first and second cover halves of the cover being sewn around the ball core.





4,248,166

SEWING MACHINE ATTACHMENT

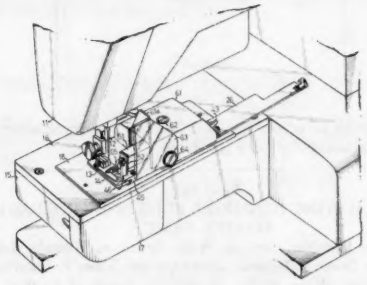
Osamu Kamiya, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jun. 4, 1979, Ser. No. 44,954

Claims priority, application Japan, Jun. 13, 1978, 53-71648

Int. Cl.[3] **D05B** *37/00, 3/02*

U.S. Cl. 112—122 **8 Claims**



1. An attachment for a sewing machine having a bed including a work supporting surface formed with an opening, a cover plate for openably closing said opening, a motion machanism mounted in said bed and including a work feeding mechanism, and an engagement member mounted in said bed for detachably locking said attachment on said bed over said opening, said attachment comprising;

an attachment frame,

an actuating mechanism mounted on said frame and including a connection arm extending below said frame, said connection arm having at its lower end a part for interconnecting said actuating mechanism and said motion mechanism,

a lock member mounted on said frame and manually operable for movement between a first position for engaging with said engagement member to lock said frame on said bed and a second position for disengaging from said engagement member to release said frame from said bed,

means for urging said connection arm extending through said opening to be operatively connected with said motion mechanism in the locked state of said attachment frame, and

means for disconnecting said connection arm from said motion mechanism against said urging means upon the manual operation of said lock member from said first position to said second position,

whereby said actuating mechanism in said attachment is automatically connected with and disconnected from said motion mechanism in said bed in relation to the manual operation of said lock member for locking and releasing said attachment on and from said bed.

4,248,167

SAFETY SYSTEM TO PROTECT SEWING MACHINE NEEDLES

Gerhard Reinert, Bayside, N.Y., assignor to The Singer Company, Stamford, Conn.

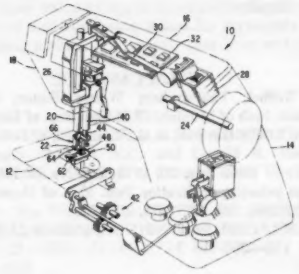
Filed Jun. 22, 1979, Ser. No. 51,334

Int. Cl.[3] **D05B** *3/02*

U.S. Cl. 112—158 R **4 Claims**

1. In a zig zag sewing machine having an endwise reciprocatory needle bar arranged for lateral jogging motion, a needle removably attached to said needle bar, means for laterally jogging said needle bar, and a downwardly biased presser bar arranged to interchangably accept a variety of presser feet inclusive of a straight stitch presser foot, means for protecting said needle comprising:

means for detecting the presence of said straight stitch presser foot; and



means for inhibiting said needle bar jogging means when said detecting means senses said straight stitch presser foot.

4,248,168

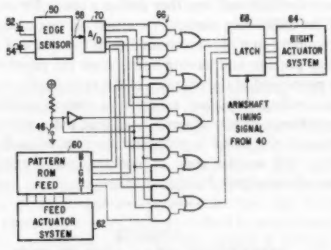
SEWING MACHINE ARRANGED FOR EDGE FOLLOWING BY NEEDLE MOVEMENT

Jay Hoffman, Livingston, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Mar. 13, 1980, Ser. No. 129,937

Int. Cl.[3] D05B *3/02*

U.S. Cl. 112—158 E **3 Claims**



1. In a sewing machine having an endwise reciprocable needle movable laterally with respect to the direction of work feed and jogging means for effecting lateral positioning of the needle, an arrangement for controlling the sewing of a line of stitches a substantially constant predetermined distance from the edge of a work fabric comprising:

means for sensing the location of said edge in the general vicinity of the needle and for providing a signal representative of the distance between said edge and said needle; and

means responsive to said signal for controlling the jogging means to laterally position said needle said predetermined distance from said edge.

4,248,169

INTERMITTENTLY OPERABLE NEEDLE THREAD SNUBBER

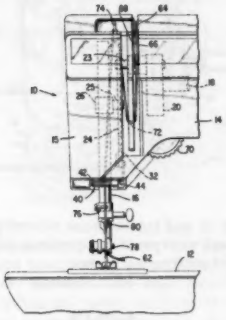
Anthony Giaimo, Staten Island, N.Y.; John R. MacInnes, Union Beach, and Robert H. Larsen, Middletown, both of N.J., assignors to The Singer Company, Stamford, Conn.

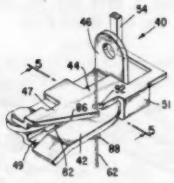
Filed Mar. 7, 1980, Ser. No. 128,205

Int. Cl.[3] D05B *47/04*

U.S. Cl. 112—255 **11 Claims**

1. In a sewing machine including a bed, a bracket arm and a depending head end portion: a needle bar extending downwardly through said head end portion to a needle affixed thereon; a take-up; means for reciprocating the needle bar and take-up; a needle thread snubber between the take-up and needle, said snubber including thread engageable parts one of which is fixed on the depending head portion and another which is pivotally mounted for sliding movement on the said one part between a position for imposing a drag on thread between the parts and a position in which the drag is removed; a spring having one end fixed in said head end portion of the





sewing machine and the other end operably connected to the pivotally mounted part of the snubber for biasing such pivotally mounted part into one of the said positions thereof; and means operably connected to the needle bar reciprocating means and extending through the depending head end portion of the machine for controlling movement of the pivotally mounted snubber part between the drag released and drag imposing positions in timed relation to reciprocation of the needle bar.

4,248,170

AUXILIARY FEED MECHANISM FOR SEWING MACHINES

Maximilian Adamski, Jr., Wheeling; Robert C. Talsma, Glen Ellyn; Robert L. Kosrow, Hoffman Estates, and Benjamin T. Bernstein, Highland Park, all of Ill., assignors to Union Special Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 833,110, Sep. 14, 1977, Pat. No. 4,147,120. This application Dec. 4, 1978, Ser. No. 966,460

Int. Cl.[3] D05B *27/12, 21/00*

U.S. Cl. 112—318 **25 Claims**

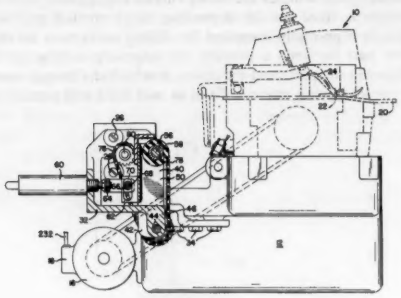
1. In a sewing machine having means for performing operations upon an edge of a workpiece, logic circuitry for operating said machine, first feed advancing means operative to move the edge of said workpiece past said performing means and an auxiliary feed mechanism comprising:

second feed advancing means arranged rearward of said first feed advancing means for creating a tension zone therebetween through which the workpiece travels;

variable speed drive means adapted to drive said second feed advancing means at an adjustably regulated feed rate;

sensor means arranged rearward of the performing means and adapted to provide an indication of the lateral position of said workpiece edge; and means for operating said

variable speed drive means under the control of said sensor means and said logic circuitry so as to vary the degree



of tension in said tension zone whereby maintaining the edge of said workpiece in a predetermined position relative to said performing means.

4,248,171

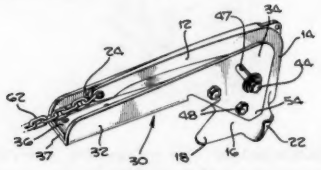
ANCHOR HANDLING AND SECURING ASSEMBLY

Robert G. Barbour, 10597 Ayres Ave., Los Angeles, Calif. 90064

Filed Jul. 2, 1979, Ser. No. 53,982

Int. Cl.³ B66D *1/24*

U.S. Cl. 114—210 **11 Claims**



1. An assembly for the raising and lowering of anchors of the Bruce type and for the firm securing of different size Bruce anchors when they are not being used, where the Bruce anchors include an L-shaped shank having a main longer shank portion, a shorter crown portion of the shank, and a palm or fluke area secured to the extreme outer end of the crown portion of the shank, said assembly comprising:

a frame having a rear channel shaped section for securing to the deck or other structure of a vessel and for receiving the main shank of the anchor, and a forward section having side members for extension beyond the vessel, said side members including protrusion means for receiving and firmly engaging the fluke area of the Bruce anchor;

means including a pulley wheel mounted between said side members on the forwardly extending section of said frame for guiding the cable for the anchor as it is raised and lowered, and for engaging both the main portion of the shank of the anchor and also the forward portion of the shank near the crown of the anchor when the main shank of the anchor is pulled firmly back along said rear channel shaped section; and

said assembly including means for movably mounting said pulley wheel to locations having different distances from said protrusion means to firmly secure different sizes of Bruce anchors with the main shank of each anchor extending along the rear channel, the protrusion means engaging the fluke area of each anchor and the pulley engaging both the main and the crown portion of the shank of the anchor near its crown;

whereby said assembly facilitates the raising and lowering of the anchor, and firmly secures Bruce anchors of a series of different sizes, with fluke or palm area engaged by said protrusions and both the longer and shorter portions of said shank engaged by said roller so that the anchor is held against rolling or vibrating under conditions of movement or vibration.

4,248,172

FILM CASSETTE

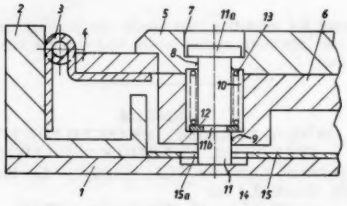
Heinz Kröbel, Taufkirchen; Walter Bauer, and Manfred Schmidt, both of Munich, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Aug. 20, 1979, Ser. No. 68,178

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1978, 2838058; Dec. 29, 1978, 2856703

Int. Cl.³ G09F *9/00;* **N01N** *9/16;* **G01D** *11/00, 13/00*

U.S. Cl. 116—200 **20 Claims**



1. A receptacle for an object, particularly a cassette for an X-ray film, comprising two portions which are coextensive with one another and together define a space for receiving the object; an indicating element mounted on one of said portions for movement in a predetermined path toward and away from the other portion and having a first zone the position of which can be perceived at the exterior of the receptacle, and a second zone extending into said space; and means defining in said other portion a recess aligned with said path, covered by the object when the latter is properly received in said space, and receiving said second zone of said indicating element in the absence of the object from said space.

4,248,173

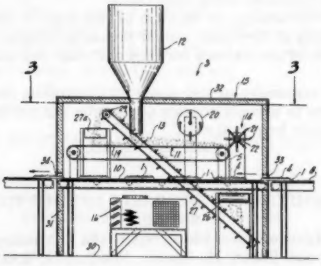
SHREDDED MEAT APPLICATOR

Harvey G. Kuhlman, N56 W21466 Silver, Menomonee Falls, Wis. 53051

Filed Aug. 31, 1978, Ser. No. 938,705

Int. Cl.³ B05C *5/00*

U.S. Cl. 118—20 **6 Claims**



1. A food applicator apparatus for depositing of frozen shredded meat on a pizza crust, comprising a support means for said pizza crust, a horizontal conveying means located above the support means for transport of a layered mass of the frozen meat means for supplying frozen meat to said conveying

means, a rotating beater unit having a plurality of circumferentially spaced and axially spaced metering blade elements, said beater unit being located adjacent the discharge end of the conveying means, said blade elements being of differing lengths, said beater unit rotating in the opposite direction from the movement of said conveying means for accurately metering of a freefalling column of shredded meat from said conveying means.

4,248,174

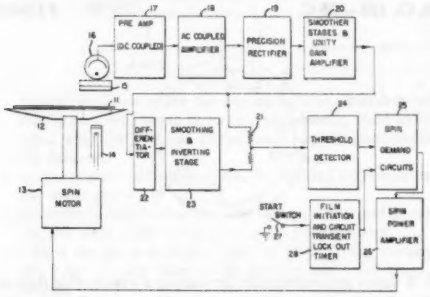
CONTROL SYSTEM FOR A SLIDE CENTRIFUGE

Robert C. Beaty, Raleigh, N.C., and Gerald R. Mansfield, Painted Post, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Division of Ser. No. 895,595, Apr. 12, 1978, Pat. No. 4,183,973. This application Mar. 19, 1979, Ser. No. 21,768

Int. Cl.³ G01N *21/00, 21/24;* **B05C** *11/02*

U.S. Cl. 118—665 **8 Claims**



1. A control system for a centrifuge for spinning transparent substrates wetted with suspensions comprising:

a source of light transmitted through the suspension wetted transparent substrate, said light having a wavelength which is absorbed by said suspensions,

means for producing a first signal representing the light passing through said transparent substrate, said first signal being representative of light absorbed by said suspensions,

means for producing from said first signal a second signal representing the rate of change of the light passing through said transparent substrate

a ratio checking circuit, said first and second signals being applied to said ratio checking circuit to produce an output which indicates when the ratio between first and second signals is a predetermined ratio between said light absorbed and the rate of change of said light absorbed, and

a threshold detector, said output of said ratio checking circuit being applied to said threshold detector, said threshold detector being connected to stop said centrifuge when said predetermined ratio is reached.

4,248,175

AUTOMATIC DOG OR CAT FEEDER

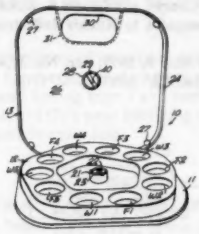
Jesus Navarro, 911 E. 39th Pl., Hialeah, Fla. 33013

Filed Nov. 14, 1979, Ser. No. 94,219

Int. Cl.³ A01K *5/02*

U.S. Cl. 119—51.12 **8 Claims**

1. An automatic dog or cat feeder comprising, in combination, a rotative tray member having a plurality of pairs of water and food bowls, said bowl pairs being equidistantly spaced about a peripheral marginal portion of said tray member, a tray member cover plate seatable upon said rotative tray member and having an opening serving to expose, one pair at a time, of said bowl pairs, and means for periodically rotating said rotative tray member with respect to said tray member cover plate so that the next rotatively successive pair of food and water bowls is brought into access position beneath said tray member cover plate opening, said means for periodically rotating said tray member comprising a substantially flat base member having an upstanding journal post, said tray member having a central hub portion recessed at its underside to removably seat upon said journal post for rotation with respect thereto, a



cover assembly hingeably secured to said base member for movement between covering and uncovering positions with respect to said tray member, said tray member cover plate being supported within said cover assembly so as to normally rest flat against upper surface portions of said tray member bowl pairs when said cover assembly is in its covering relation with respect to said tray member.

4,248,176

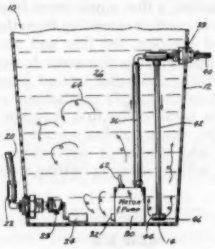
LIVESTOCK MEDICATOR APPARATUS

Ray R. Kilstofte, Story City, Iowa, assignor to True Med, Inc., Story City, Iowa

Filed Mar. 9, 1979, Ser. No. 19,093

Int. Cl.³ A01K *7/02*

U.S. Cl. 119—72 **5 Claims**



1. A medication mixing, holding and dispensing, tank, having a medicated fluid outlet line

a pump associated with said tank and said fluid outlet line for pumping medicated fluid from said tank through said medicated fluid outlet line to a livestock watering line,

a fluid recirculating line positioned between said pump and said medicated fluid outlet, which is in open communication with said medicated fluid outlet line at one end and with the interior of said tank at its other end,

said fluid recirculating line being of smaller inside diameter than said medicated fluid outlet line and which continuously agitates and recirculates fluid in said tank when no demand is made upon said livestock watering line, and which is automatically substantially bypassed for dispensing agitated, substantially homogeneous medicated fluid whenever a use demand is made on said livestock watering line,

said tank having a fresh water inlet positioned adjacent the bottom of said tank, and

a float valve positioned inside of said tank in association with

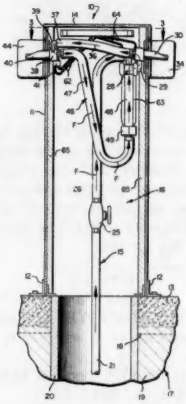
said fresh water inlet for activation to feed fresh water into said tank whenever said tank is substantially depleted of medicated fluid.

4,248,177

ANIMAL WATERER WITH RECIRCULATING WATER SYSTEM

Jerry D. Peterson, Conrad, and Gerald L. Knief, Grundy Center, both of Iowa, assignors to Ritchie Industries, Inc., Conrad, Iowa

Filed May 9, 1979, Ser. No. 37,451
Int. Cl.³ A01K *7/02, 7/06*
U.S. Cl. 119—73 **22 Claims**



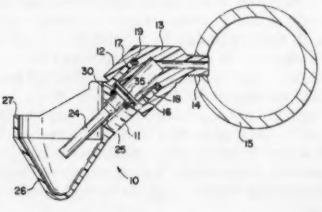
1. A recirculating animal waterer, comprising, in combination, a water supply conduit adapted to extend from a water source to a first junction, a first nipple extending from the first junction, a cross-over conduit extending from the first junction to a remote second junction, the first and second junctions being mounted at substantially the same hydraulic levels, a second nipple extending from the second junction, a return conduit separated from the supply conduit and extending from the second junction back to the first junction, and a heater mounted adjacent the return conduit whereby to heat water in the return conduit and encourage convective, endless water flow in the waterer without directly heating water in the water supply conduit.

4,248,178

POULTRY WATERING CUP

Herman J. Kneubuehl, Sterling, Ohio, assignor to Klean Kup Systems, Inc., Smithville, Ohio

Filed Jun. 20, 1979, Ser. No. 50,178
Int. Cl.³ A01K *7/00*
U.S. Cl. 119—75 **2 Claims**



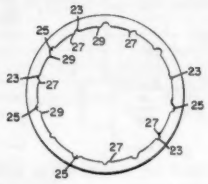
1. A poultry watering cup having an upwardly inclined tubular housing forming a valve chamber, an annular seat in said chamber, an O-ring on said seat, a valve having a head normally seated on said O-ring and a stem extending through said O-ring and tubular housing in spaced relation thereto and into said cup so that the valve head is tiltable off said O-ring by lateral movement of said stem, a second annular and sharp seat in said housing above said first seat, a resilient valve disk normally seated on said second seat in close proximity to said valve head so as to be tilted off its seat by tilting of said head, and a connector tube telescoped over said tubular valve housing and having an inner water supply tube terminating closely adjacent to said valve disk for sealing against said disk during reverse flow of water through said supply tube.

4,248,179

INTERNALLY GROOVED HEAT TRANSFER CONDUIT

Stanley V. Bonner, Potterville, N.J., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Jul. 13, 1979, Ser. No. 57,240
Int. Cl.³ F28F *1/40*
U.S. Cl. 122—235 C **9 Claims**



1. A vapor generating tube for passing a vaporizable fluid in heat exchange relation with a source of heat, said fluid absorbing heat as it passes through said tube, comprising:

(a) a generally cylindrical body including an internal wall said fluid being exposed to said wall,

(b) a first portion of said internal wall forming a generally cylindrical passageway,

(c) a second portion of said internal wall forming a groove extending along the length of said body and defining a helix, and

(d) a third portion of said internal wall forming a lip disposed adjacent said groove, and extending with said groove along the length of said body, said lip defining a helix.

4,248,180

MECHANISM FOR ROTATING AND RECIPROCATING A SOOT BLOWER

Robert P. Sullivan, Chattanooga, and Clyde L. Jacobs, Signal Mountain, both of Tenn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Mar. 26, 1979, Ser. No. 23,998
Int. Cl.³ F23J *3/02*
U.S. Cl. 122—390 **7 Claims**

2. A soot blower, including,

a first frame mounted on the external surface of a furnace wall and over an opening through the wall,

a second frame mounted as an extension of the first frame and extending normal the plane of the furnace wall,

a fluid lance provided with a first portion of its length having a square cross section and mounted as an elongated conduit within the second frame and with a range of reciprocation to move its first end through the wall opening and into the furnace interior,

a table mounted on the second frame engaging the square section of the first portion of the lance length and rotatable on its frame mounting,

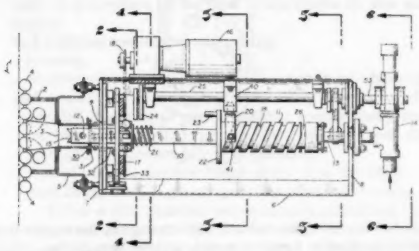
a motive means mounted at a position stationary relative to the second frame,

linkage connected between the motive means and the table through which the motive means rotates the table and lance in either of two directions of rotation,

a feed tube connected to a source of cleaning fluid and extending into the second frame and into the second end of the lance to supply cleaning fluid to the end of the lance reciprocated into the furance interior,

a control valve in the feed tube for regulation of the cleaning fluid flow into the lance,

a control linkage for the valve extending and arranged to



engage the lance when the lance has been extended into the furnace interior so as to provide cleaning fluid to the lance after the first end of the lance is positioned within the furnace,

a second portion of the lance length provided with an external spiral groove,

and a yoke fixed by one end to the second frame and engaging the sides of the spiral groove by a second end,

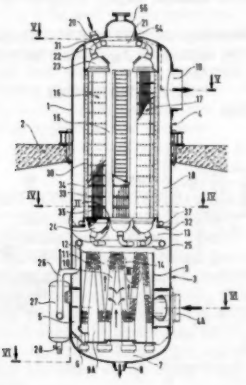
whereby the lance is reciprocated by engagement between the yoke and the sides of the groove when the lance is rotated.

4,248,181

VERTICAL STEAM SEPARATOR-SUPERHEATER

Roger Bessouat, and Jacques Marjollet, both of Paris, France, assignors to Stein Industrie, Velizy Villacoublay, France

Filed Oct. 11, 1978, Ser. No. 950,299
Int. Cl.³ F22B *1/06*
U.S. Cl. 122—483 **5 Claims**



1. A vertical steam separator-superheater comprising a common casing enclosing a lower portion which forms a separation zone and an upper portion which forms a superheating zone; a thin, flexible casing fixed to the common casing at its upper end; an axial dry steam inlet zone within the superheating zone; tubular nests of superheater tubes disposed in envelopes spaced out around the dry steam inlet zone and fixed to said thin, flexible casing; and a peripheral superheated steam collection zone.

4,248,182

ANTI-WEAR ADDITIVES IN DIESEL FUELS

Robert E. Malec, Birmingham, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed Sep. 4, 1979, Ser. No. 72,031
Int. Cl.³ C10L *1/18*
U.S. Cl. 123—1 A **22 Claims**

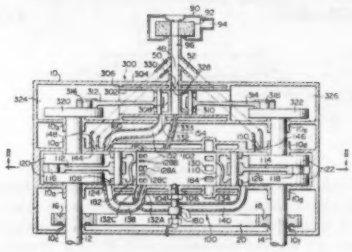
1. As a new composition of matter, an anti-wear compression ignition fuel for use in diesel engines comprising (1) a monohydroxy alkanol having from 1 to 5 carbon atoms, (2) an ignition accelerator, and (3) a wear inhibiting amount of a C_8 to C_{20} aliphatic monocarboxylic acid.

4,248,183

TWO-STROKE CYCLE DIESEL ENGINE

Masaaki Noguchi, Nagoya; Yukiyasu Tanaka, and Isao Igarashi, both of Okazaki, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Dec. 5, 1978, Ser. No. 966,597
Claims priority, application Japan, Aug. 2, 1978, 53-94239
Int. Cl.³ F02B *25/08*
U.S. Cl. 123—51 B **15 Claims**



1. A two-stroke cycle diesel engine, comprising: at least one two-stroke cycle power cylinder-piston assembly having a power cylinder, having scavenging ports located near one axial end thereof and exhaust ports located near the other axial end thereof, two horizontally opposed power pistons, two crankcases, and two crank arms, and incorporating uniflow scavenging effected axially through said power cylinder from said scavenging ports to said exhaust ports, a scavenging pump device which supplied scavenging air; including at least one reciprocating pump cylinder-piston assembly having a pump cylinder and at least one pump piston, and which is separate from and is driven by said power cylinder-piston assembly; and scavenging air introducing device which introduces said scavenging air to said power cylinder, said scavenging air introducing device including a forced swirl generating device which generates a forced swirl of scavenging air in said power cylinder which rotates around the central axis of said power cylinder, wherein said scavenging air introducing device is adapted so as to perform a first stage of operation which effects scavenging without distinguished operation of said forced swirl generating device so that no strong swirl of scavenging air around the central axis of said power cylinder is generated and a second stage of operation which effects scavenging with distinguished operation of said forced swirl generating device so that a strong swirl of scavenging air around the central axis of said power cylinder is generated, wherein said power cylinder includes first and second scavenging ports, said scavenging air introducing device includes first and second passage systems which conduct scavenging air supplied from said scavenging pump device to said first and second scavenging ports, respectively, and said forced swirl generating device includes an air introducing device which gives swirl to scavenging air

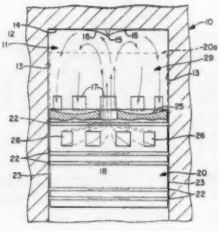
introduced into said power cylinder through said second passage system and a closer which isolates said first passage system from said pump cylinder-piston assembly before said pump cylinder-piston assembly reaches its top dead center, and wherein said second scavenging port is so arranged as to be opened at a phase point which is 5°–15° behind the phase point at which said first scavenging port is opened and which is not behind a phase point which is symmetric to the top dead center of said pump cylinder-piston assembly with respect to the line which connects the top dead center and the bottom dead center of said power cylinder-piston assembly, as viewed according to crank angle.

4,248,184

TWO-CYCLE DIESEL INTERNAL COMBUSTION ENGINE

Thomas A. Maul, Cuyahoga Falls, Ohio, assignor to Maul Enterprises, Cuyahoga Falls, Ohio

Filed Jun. 4, 1979, Ser. No. 44,981
Int. Cl.³ F02B *75/02, 39/09*
U.S. Cl. 123—65 R **5 Claims**



1. An improvement to an internal combustion engine having at least one cylinder and piston, including intake passages, and exhaust passages for the transformation of combustible fluids and input gas into released energy and evacuated exhaust fluids, wherein the improvement comprises:

(a) an exterior cylindrical surface of said piston having a plurality of intake ports therein;

(b) an exterior compression surface of said piston having means for projecting new input gas in a direction orthogonal to said exterior compression surface, and further having a recessed area to cooperate with said projecting means to enhance compression within the cylinder, said projecting means comprising a flume port for controlled projecting of the new input gas;

(c) an interior compression surface of said cylinder for deflecting the new input gas convexly within the bore of said cylinder, said interior compression surface having a combustible fluid injection port therein and said exterior compression surface extending on upward stroke to a point where said flume port is physically apart from association with said interior compression surface; and

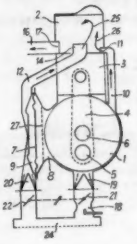
(d) an interior cylindrical surface of said cylinder having a plurality of intake outlets and a plurality of exhaust ports, said exhaust ports closer to said interior compression surface than said intake outlets and said intake ports of said exterior cylindrical surfaces of said piston, said intake outlets and said intake ports communicating during the intake-exhaust cycle whereby the input gas is rapidly introduced and forcefully injected as a flume into the cylinder to flush and evacuate the exhaust fluids.

4,248,185

TWO-CYCLE ENGINE WITH PURE AIR SCAVENGING

Eric Jaulmes, 11, Avenue de Bel Air, 75012 Paris, France

Filed Jul. 17, 1979, Ser. No. 58,374
Claims priority, application France, Jul. 19, 1978, 78 21357
Int. Cl.³ F02B *33/04*
U.S. Cl. 123—73 R **10 Claims**



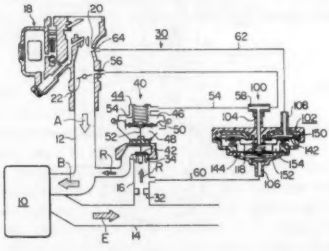
1. A two-cycle internal combustion engine, the engine comprising a cylinder; a piston in said cylinder; at least one exhaust ports, at least one carbureted air intake port and at least one pure air inlet port in the cylindrical wall of said cylinder, all of said ports being covered and uncovered by said piston as it moves in said cylinder; a crankcase pump, said crankcase pump being divided into a first chamber and a second chamber by a membrane; at least one first transfer passage connecting said first chamber to said cylinder via said at least one pure air inlet port; at least one second transfer passage connecting said second chamber to said cylinder via said at least one carbureted air inlet port, said at least one pure air inlet port being position in said cylinder wall so as to be uncovered during downward movement of said piston in said cylinder ahead of said at least one carbureted air inlet port; means for admitting pure air into said first chamber; and means for admitting carbureted air into said second chamber, whereby the pure air supplied via said at least one pure air inlet port scavengers exhaust gases during operation of the engine.

4,248,186

EXHAUST GAS RECIRCULATION CONTROL SYSTEM

Kinsaku Yamada, Katsuta, Japan, assignor to Hitachi, Ltd., Japan

Filed Sep. 28, 1979, Ser. No. 80,024
Claims priority, application Japan, Sep. 29, 1978, 53/120901; Dec. 20, 1978, 53/158338
Int. Cl.³ F02B *47/08*
U.S. Cl. 123—568 **7 Claims**



1. In an E.G.R. control system of the type that comprises an E.G.R. valve means including a first valve seat provided in an E.G.R. passage of an internal combustion engine, a first valve member cooperative with said first valve seat to vary the exhaust gas flowing cross-section of said E.G.R. passage and a vacuum-operated actuator connected by a first pneumatic line

to a first vacuum source provided by said engine, a fixed restriction provided in said E.G.R. passage upstream of said first valve seat, said actuator also being operatively connected to said first valve member to move the same relative to said first valve seat for thereby varying the exhaust gas pressure in said E.G.R. passage between said fixed restriction and said first valve seat, the improvement which comprises:

a pressure modulator provided on said first pneumatic line and being operative to modulate the vacuum applied to said valve actuator so that the exhaust gas recirculation flow as controlled by said E.G.R. valve means is substantially in proportion to the flow of the intake air into said engine;

said pressure modulator comprising:

a housing;

a diaphragm assembly movably disposed in said housing;

said diaphragm assembly including a pair of substantially parallel diaphragms and a member mechanically connecting said diaphragms together so that said diaphragms are deformed simultaneously;

one of said diaphragms being larger than the other;

said larger diaphragm cooperating with said housing to define a first chamber pneumatically connected by a second pneumatic line to a second vacuum source which provides a pressure signal representing the flow of the intake air into said engine;

said larger diaphragm cooperating with the smaller diaphragm and with said housing to define a second chamber vented to the atmosphere; said smaller diaphragm cooperating with said housing to define a third chamber connected by a third pneumatic line to said E.G.R. passage between said fixed restriction and said first valve seat;

means defining a pressure modulating passage pneumatically connecting said second chamber to said first pneumatic line between the ends thereof;

said passage defining means also providing a second valve seat disposed in said second chamber and extending around the inner end of said pressure modulating passage;

spring means resiliently biasing said diaphragm assembly away from said first chamber towards said third chamber;

a second valve member disposed in said second chamber in opposite relationship to said second valve seat;

said second valve member being carried by said diaphragm assembly for movement therewith toward and away from said second valve seat, whereby said second valve member is operative to control the flow of the atmospheric air from said second chamber through said second valve seat and said pressure modulating passage into said first pneumatic line to thereby modulate the vacuum from said first vacuum source as applied to said actuator.

4,248,187

ELECTRONIC CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

Takeshi Matsui, Aichi; Tokio Kohama, Nishio; Hisasi Kawai, Toyohashi; Akira Nishimatsu; Toshikazu Ina, both of Aichi; Hidetaka Nohira, and Kiyoshi Kobashi, both of Mishima, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Aug. 8, 1979, Ser. No. 64,871

Claims priority, application Japan, Aug. 10, 1978, 53-97518

Int. Cl.[3] **F02B** *47/08;* **F02M** *25/06*

U.S. Cl. 123—568 **4 Claims**

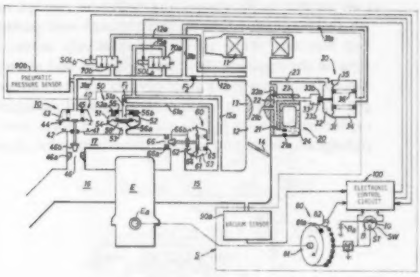
1. An electronic control system for an internal combustion engine having a carburetor and an exhaust gas recirculation system, said carburetor including an air induction passage with a venturi portion, a fuel passage supplying fuel from a float chamber into said venturi portion and an air passage permitting the flow of air into said fuel passage to be mixed with fuel, and said exhaust gas recirculation system including a recirculation conduit to provide a communication between an intake manifold and an exhaust pipe of said engine, said control system comprising:

first and second servomotors to be operated by pneumatic pressure applied thereto;

first flow control means associated with said first servomotor for increasing the quantity of exhaust gases flowing through said conduit from said exhaust pipe to said intake manifold in accordance with decrease of the pneumatic pressure and for decreasing the quantity of exhaust gases in accordance with increase of the pneumatic pressure;

second flow control means associated with said second servomotor for increasing the quantity of air flowing through said air passage in accordance with increase of the pneumatic pressure and for decreasing the quantity of air in accordance with decrease of the pneumatic pressure;

first detecting means for producing a first electric binary signal indicative of rotational speed of said engine;



second detecting means for producing a second electric binary signal indicative of intake manifold vacuum of said engine; third detecting means for detecting pneumatic pressure applied to said first and second servomotors to produce an electric signal indicative of the pneumatic pressure;

a digital computer for calculating a value indicative of optimum pneumatic pressure to be applied to said first and second servomotors in accordance with said first and second binary signals, said computer being programmed to calculate the optimum value from a function describing a desired relationship among optimum pneumatic pressure, rotational speed and intake manifold vacuum of said engine; and

means for applying a pneumatic pressure corresponding with the calculated optimum value to said first and second servomotors in accordance with said electric signal from said third detecting means.

4,248,188

HYDRAULIC ATTENUATOR FOR AIR FUEL CONTROL PUMP

Harry L. Wilson, and David E. Shultz, both of Columbus, Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Dec. 29, 1978, Ser. No. 974,563

Int. Cl.[3] **F02M** *39/00;* **F02D** *1/04*

U.S. Cl. 123—382 **11 Claims**

1. A fuel supply system for an internal combustion engine having a fuel source, a pump for supplying fuel from the source to the engine, a drain line for returning fuel from the engine to the fuel source, and an intake manifold for supplying air to the engine, comprising

(a) air pressure responsive means for modulating mechanically the flow of fuel into the engine in response to the pressure of air within the intake manifold, said air pressure responsive means including

(1) a cavity

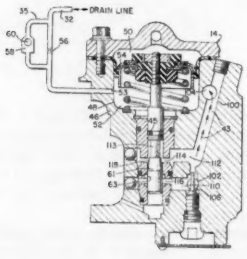
(2) pressure responsive actuating means connected within said cavity for transforming changes in intake manifold pressure into mechanical movement for operating said air pressure responsive means, said pressure responsive actuating means including a flexible diaphragm dividing said cavity into a control chamber and an attenuating chamber, and

(3) an air line connecting said intake manifold with said control chamber; and

(b) transient response modifying means for causing said air pressure responsive means to respond more slowly to increasing pressure within the intake manifold than to decreasing pressure, said transient response modifying means including

(1) passage means for forming a passageway between the drain line and said attenuating chamber to cause fuel to flow into and out of said attenuating chamber in response to mechanical movement of said pressure responsive actuating means, and

(2) attenuator means connecting with said passage means for restricting the flow of fuel through said passage in one direction while permitting relatively unrestricted flow in the opposite direction, wherein said attenuator means includes a valve assembly having first and second ports and having first and second parallel passageways extending between said first and second ports, said first passageway including a check valve means for allowing



relatively unrestricted flow of fluid from said source of fluid into said attenuating chamber and for prevention of flow of fluid from said attenuating chamber back to said source of fluid, said second passageway including a flow restriction means for restraining the fluid flow rate through said second passageway to a predetermined level, wherein said check valve means includes an enlarged cavity at the end of said first passageway leading to said attenuating chamber, and wherein said valve assembly includes an inner valve housing and an outer cup-shaped fitting telescopingly interconnected with said valve housing, said enlarged cavity having a central axis parallel to and laterally spaced from the central axis of said valve housing, said valve assembly including a washer member having an outside diameter smaller than the inside diameter of said valve housing, said washer member including a centrally located aperture only partially registered with said enlarged cavity, said check valve means further including a valve element located within said enlarged cavity and movable in a first direction away from said washer element to close off flow through said check valve and movable in an opposite direction to engage said washer element in a position which permits fluid flow out of said enlarged cavity through an opening formed by the partial registration of said centrally located aperture and said enlarged cavity.

4,248,189

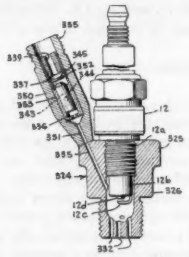
SPARK PLUG AND ADAPTER FOR LEAN MIXTURE ENGINE CYLINDERS

Alvan W. Barber, Daytona Beach, Fla., and Leslie M. L. James, Santa Barbara, Calif., assignors to Universal Straticication Systems, Inc., Daytona Beach, Fla.

Filed Mar. 20, 1979, Ser. No. 22,297

Int. Cl.³ F02B *19/10*

U.S. Cl. 123—169 PA **23 Claims**



1. A spark plug and adapter assembly for an internal combustion engine having an ignition fuel source conduit and plural main combustion chambers supplied with a lean fuel/air mixture, the combustion chambers of the engine having intake, compression, power and exhaust phases, the assembly comprising a spark plug for each main combustion chamber having an elongated body supporting electrodes defining a spark gap at one end thereof and a threaded portion, a spark plug adapter having a bore threaded and sized to receive said threaded portion and the electrode end portion of the spark plug and having means surrounding a portion of said bore defining a dome-like mini-combustion chamber of limited volume surrounding and enclosing the spark gap and having communication ports for passage of gasses therethrough between the main combustion chamber and the mini-combustion chamber, branch passage means having a branch passage communicating at one end with said mini-combustion chamber and at its other end with said ignition fuel source conduit to supply fuel to the mini-combustion chamber during the intake phase for the associated main combustion chamber, fuel metering means interposed in said branch passage for metering the quantity of the ignition fuel admitted into the mini-combustion chamber during the intake phase including first and second serially connected chamber portions having a metering piston movable axially in the first chamber portion between projected and retracted positions reponsive to pressure conditions communicated from the main combustion chamber and a disc member movable in the second chamber portion by said piston to a first position closing an end of the first chamber portion to define with said piston in retracted position a fuel trapping metering chamber of predetermined volume therein communicating with the mini-combustion chamber during the intake phase and movable by the piston upon piston movement to projected position to occupy a second position during the combustion, power and exhaust phases closing off branch passage communication with said fuel source conduit.

4,248,190

FLUID INJECTION APPARATUS FOR USE WITH VEHICLES HAVING ON-BOARD COMPRESSED AIR SYSTEMS

Gilbert R. Grigsby, 125 W. Avenue 29, Los Angeles, Calif. 90031

Filed Jul. 23, 1979, Ser. No. 59,732

The portion of the term of this patent subsequent to Sep. 4, 1996, has been disclaimed.

Int. Cl.³ F02M *1/16;* **F16T** *1/14*

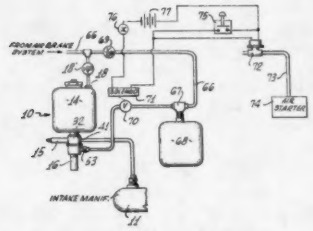
U.S. Cl. 123—180 R **12 Claims**

1. In a vehicle having an on-board compressed air system

and an internal combustion engine including a plurality of cylinders and an injector apparatus for supplying starting fluid to the cylinders of said engine, said injector apparatus comprising:

a starting fluid reservoir;

fluid delivery means for supplying said fluid to said cylinders in response to the application of air pressure thereto, said delivery means being connected to said reservoir to receive fluid therefrom;



a reserve air tank;

a first air line connecting said reserve air tank to said delivery means; and

a second line for connecting said reserve air tank to said on-board compressed air system, whereby said fluid delivery means can be operated by air pressure from said reserve air tank regardless of the presence of pressure in said on-board compressed air system.

4,248,191

METHOD AND MEANS FOR PREVENTING VALVE BRIDGE CRACKS IN CYLINDER HEADS OF INTERNAL COMBUSTION ENGINES

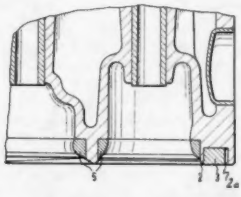
Max Albert, Nuremberg, Fed. Rep. of Germany, assignor to Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Nuremberg, Fed. Rep. of Germany

Filed May 8, 1979, Ser. No. 37,024

Claims priority, application Fed. Rep. of Germany, May 9, 1978, 2820149

Int. Cl.³ F02F *1/24*

U.S. Cl. 123—188 S **2 Claims**



1. In a method applicable particularly to cylinder heads of Diesel engines for preventing valve bridge cracks between valve ports in cast metal of cylinder heads of internal combustion engines including a cylinder with an axis, valve seats, and a surface facing a combustion chamber as well as having at least two spaced-apart valve ports with the cylinder head being exposed to compressive stresses acting radially inwardly in a region between the valve seats and the surface facing the combustion chamber, and including the step of:

providing an annular groove spaced radially outwardly of the valve ports within the surface of the cylinder head intended to be directed towards the combustion chamber of an internal combustion engine; and the improvement in combination therewith comprising the step of:

inserting ring means shrink fitted into the groove of the cylinder head for exerting radially inwardly directed superimposed compressive prestressing entirely in the region of the valve seats and concentrically to the axis of the cylinder subjected to alternating temperature stressing to prevent valve bridge cracks under fatigue conditions.

4,248,192

INTERNAL COMBUSTION ENGINE AND METHOD OF OPERATION THEREOF WITH ISOLATED COMBUSTION INITIATION

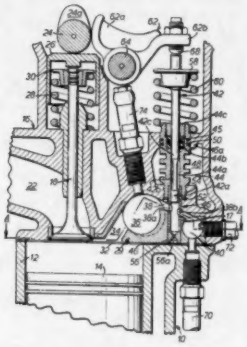
Robert D. Lampard, 30 Kings Park Rd., West Perth, Australia

Filed May 5, 1978, Ser. No. 903,243

Claims priority, application Australia, May 5, 1977, PC9992; May 5, 1977, PC9993; May 16, 1977, PD0101; Nov. 22, 1977, PD2504

Int. Cl.³ F02B *19/02*

U.S. Cl. 123—256 **14 Claims**



1. A divided chamber, split phase engine comprising:

a cylinder having a closed end, inlet and exhaust valves, and a first passageway opening formed in the closed end, said inlet valve controlling fluid flow into the interior of said cylinder, and said outlet valve controlling fluid flow from said cylinder;

a piston cyclically reciprocable in said cylinder to cause cyclic variation in the volume defined in the cylinder between said piston and said closed end, so as to effect, during a cycle of operation, at least an induction stroke when the piston moves away from the closed end, and a compression stroke when the piston moves towards the closed end;

a main combustion chamber formed in a portion of said closed end of said cylinder spaced from the defined volume;

a first passageway formed in said closed end and interconnecting said main combustion chamber with said first passageway opening;

a substantially closed subsidiary combustion chamber smaller than said main combustion chamber formed in a portion of said closed end of said cylinder spaced from the defined volume and said main combustion chamber;

a second passageway formed in said closed end and having ends in permanent fluid communication with said main and said subsidiary chambers for interconnecting said main and said subsidiary combustion chambers;

control valve means positioned intermediate ends of said second passageway for controlling fluid flow through said second passageway;

means for admitting fuel into said main and said subsidiary combustion chambers;

means for igniting a first fuel-air mixture in said subsidiary combustion chamber; and

control means for controlling said control valve means, said control means placing said control valve means in a first open position permitting fluid flow from the defined vol-

ume into said subsidiary combustion chamber via said passageways and said main combustion chamber, said control valve means being in the first open position during an initial portion of the compression stroke so that pressure of fluid in both said main subsidiary combustion chambers increases, said control means placing said control valve means in a position blocking fluid flow through said second passageway during a subsequent portion of the compression stroke, said means for admitting fuel being operative to admit fuel into said subsidiary combustion chamber to form the first fuel-air mixture and being operative to admit fuel into said main combustion chamber to form a second fuel-air mixture, said control means placing said control valve means in a second open position after ignition of the first fuel-air mixture so that the ignited first fuel-air mixture passes through the second passageway and ignites the second fuel-air mixture, the ignited second fuel-air mixture passing through said first passageway into said cylinder volume and expanding therein.

4,248,193

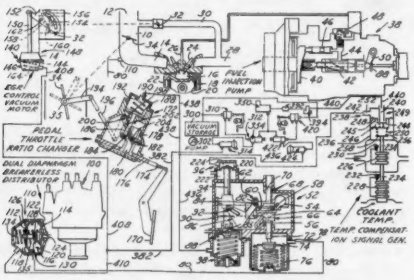
FUEL INJECTION FUEL CONTROL SYSTEM

Michael A. Choma; Aladar O. Simko, both of Dearborn Heights; Michael M. Schechter, Southfield, and Wallace R. Wade, Farmington Hills, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Sep. 1, 1978, Ser. No. 939,005

Int. Cl.³ F02P *5/04;* **F02M** *25/06;* **F02D** *1/02*

U.S. Cl. 123—341 **21 Claims**



1. A fuel injection control system for an internal combustion engine of the spark ignition type including an air-gas induction passage open at one end to air at ambient pressure level and connected at its other end to the engine combustion chamber to be subject to manifold vacuum changes therein, a throttle valve rotatably mounted for movement across the passage to control the air-gas flow therethrough, an exhaust gas recirculation (EGR) system including EGR passage means connecting engine exhaust gases to the induction passage above the closed position of the throttle valve, an EGR flow control valve mounted therein for movement between open and closed positions to control the volume of EGR gas flow, an engine ignition timing control device movable to vary the timing, an engine speed responsive positive displacement type fuel injection pump having a fuel flow output to the injector that varies as a function of changes in engine speed to match fuel flow and mass air flow through the induction system of the engine over the entire speed and load range of the engine to maintain the intake mixture ratio of air to fuel constant, an air/fuel ratio regulator operably connected to the pump and movable in response to changes in intake manifold vacuum connected thereto to vary the fuel output of the pump to maintain a constant air/fuel mixture ratio, a first vacuum circuit having a source of vacuum operably connected in parallel flow relationship both to the EGR valve and to the ignition timing control device for providing an adjustment of the ignition timing whenever the EGR flow is adjusted so as to compensate for the change in air/fuel mixture charge burn rate whenever the quantity of EGR gas in the mixture charge is varied, a second vacuum circuit connecting the source of vacuum to the air/fuel ratio regulator for modifying the regulator movement that normally is made in response to changes in intake manifold vacuum alone so as to compensate for changes in the concentration of oxygen in the gas mass flow to the engine whenever the rate of EGR flow changes upon movement of the throttle valve, to thereby maintain a constant air/fuel ratio, the second circuit including first vacuum controlled means connected to the regulator for modifying the movement of the regulator as a function of driver demand signal as indicated by the open angle of the throttle valve and as a function of engine load conditions, to change the pump output to provide the constant air/fuel ratio at times as well as at other times an air/fuel ratio other than the constant air/fuel ratio, and the first vacuum circuit including second controlled means operably interconnecting the EGR valve and throttle valve and engine ignition timing device.

4,248,194

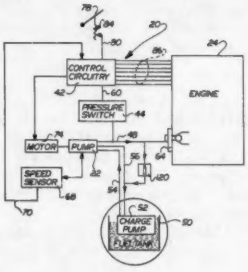
METHOD AND APPARATUS FOR CONTROLLING THE OPERATION OF A PUMP

Gilbert H. Drutchas, Birmingham, Mich., and David N. Wormley, Needham, Mass., assignors to TRW Inc., Cleveland, Ohio

Filed Aug. 23, 1979, Ser. No. 68,943

Int. Cl.³ F02B *3/00;* **F02M** *39/00*

U.S. Cl. 123—357 **37 Claims**



1. A method of controlling the rate at which fuel is supplied to an engine by a fuel pump, said method comprising the steps of determining a series of curves which indicate the manner in which pump output varies with pump operating speed, determining at a first time which one curve of the series of curves is representative of the manner in which fuel pump output varies with pump speed by simultaneously sensing fuel pump operating speed and output pressure during engine operation, and thereafter varying the fuel pump operating speed in accordance with the one curve to provide a desired variation in fuel pump output to the engine.

4,248,195

APPARATUS FOR CONTROLLING THE DUTY FACTOR OF SEQUENCE OF CYCLICALLY OCCURRING PULSES CONTROLLING FLOW THROUGH AN IMPEDANCE

Ingo Gorille, Oberriexingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 19, 1979, Ser. No. 4,670

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1978, 2803556

Int. Cl.³ F02P *3/00*

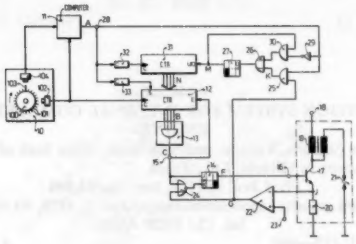
U.S. Cl. 123—416 **10 Claims**

1. In a cyclically operable system having first circuit means having an impedance element **(19)** and control means **(17, 14)** connected to said impedance element for interrupting current flow therethrough in response to a current interrupt signal, and

means for furnishing a timing signal (A) at a desired current interrupt time in each cycle,

apparatus for furnishing said current interrupt signal, comprising

means for continuously comparing the actual amplitude of said current to a desired amplitude and furnishing a comparator output signal only when said actual amplitude is greater than said desired amplitude; and



logic circuit means (**24, 14**) connected to said timing signal furnishing means, said comparator means and said control means for delaying said timing signal until receipt of said comparator output signal and furnishing said current interrupt signal in response to the so-delayed timing signal.

4,248,196

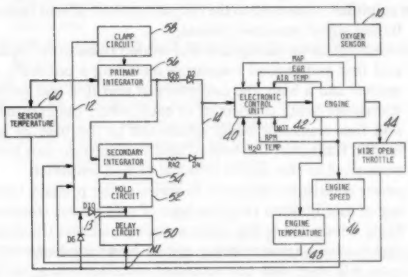
OPEN LOOP COMPENSATION CIRCUIT

Alvin D. Toelle, Fenton, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed May 1, 1979, Ser. No. 35,128

Int. Cl.³ F02M *51/02*

U.S. Cl. 123—489 **20 Claims**



1. A closed loop air/fuel ratio management system for an internal combustion engine having an open loop air/fuel ratio controller, said closed loop system comprising;

a primary integrator circuit for compensating transient conditions of the open loop controller based upon the oxygen content of the exhaust gas of the internal combustion engine; said primary integrator circuit generating a primary correction signal to the open loop controller which causes the air/fuel ratio to increase when there is a relative absence of oxygen in the exhaust gas and to decrease the air/fuel ratio when there is a substantial presence of oxygen in the exhaust gas, said primary correction signal forming a limit cycle about a noncorrectional value;

a secondary integrator circuit for compensating gross conditions of the open loop controller based upon said primary correction signal, said secondary integrator circuit generating a secondary correction signal to the open loop controller which causes the air/fuel ratio to increase when said primary correction signal is greater than said noncorrectional value and to decrease when said primary integrator is less than said noncorrectional value;

means for clamping said primary integrator to its noncorrectional value during at least one special engine condition, said clamping means releasing said primary integrator upon the cessation of said special engine condition; and

means for holding said secondary integrator during said engine condition to generating said secondary correctional signal as the last instantaneous operating point of said secondary integrator before the condition occured, said holding means releasing said secondary integrator upon the cessation of said special engine condition.

4,248,197

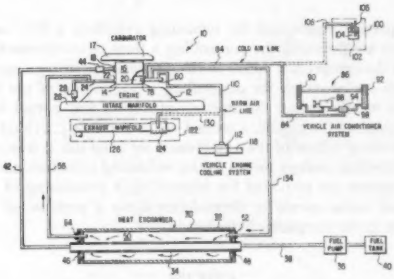
APPARATUS FOR REDUCING HYDROCARBON EMISSIONS IMPROVING EFFICIENCY OF VEHICLE INTERNAL COMBUSTION ENGINES

O. Thurston Davis, Rte. #1, P.O. Box 33, and B. Thurman Davis, Rte. #1, P.O. Box 258, both of Dunlap, Tenn. 37327

Filed Mar. 30, 1979, Ser. No. 25,474

Int. Cl.³ F02M *31/00*

U.S. Cl. 123—557 **10 Claims**



1. In combination with a vehicle having an internal combustion engine and a carburetor with a vacuum inlet port and a fuel inlet port and a fuel system including a fuel tank and a fuel pump for delivering fuel from said fuel tank to said carburetor, including in combination:

(a) a heat exchanger having a tank means with an inlet and an outlet, said outlet being connected to said vacuum inlet port of said carburetor and tube means extending through said tank means and connected intermediate said fuel inlet port of said carburetor and said fuel pump,

(b) a source of hot and cold air connected to said inlet of said heat exchanger, and

(c) control means for regulating the amount of said hot and cold air entering said inlet of said heat exchanger in accordance with the temperature of said fuel in said carburetor.

4,248,198

MULTI-CYLINDER DIESEL ENGINE

Herbert Deutschmann, Friedrichshafen, and Franz Geray, Langenargen, both of Fed. Rep. of Germany, assignors to Motoren und Turbinen-Union Freidrichshafen GmbH, Fed. Rep. of Germany

Filed Nov. 28, 1978, Ser. No. 964,173

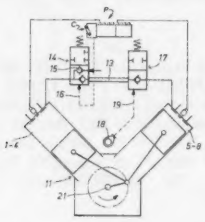
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1977, 2753584

Int. Cl.³ F02B *33/02*

U.S. Cl. 123—559 **20 Claims**

1. A supercharged diesel engine with a compression ratio of less than 1:12, the engine including a plurality of cylinders each having a piston reciprocally mounted therein and intake valve means and exhaust valve means for each of the cylinders, a number of the plurality of cylinders are operable for a starting

operation and during a partial load operation as a compressor means for producing compressed air, the remaining cylinders of the plurality of cylinders are operable as an engine, and means for feeding the compressed air produced by the compressor means to the remaining cylinders such that the remaining cylinders are supplied with compressed air in addition to combustion air sucked in through the intake valve means of the remaining cylinders, characterized in that the feeding means includes at least one intermediate storage means for accommodating the compressed air operatively connected with the



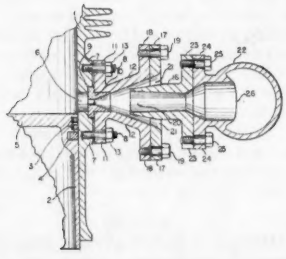
compressor means and the remaining cylinders, a first valve means are provided for controlling a flow of compressed air from the compressor means to the intermediate storage means, means are provided for controlling a positioning of the first valve means during the starting operation and partial load operation of the engine, a second valve means is provided for controlling a flow of the compressed air from the at least one intermediate storage means to the remaining cylinders, and in that means are provided for controlling a positioning of the second valve means in dependence upon a position of the piston in the remaining cylinders.

4,248,199

BIDIRECTIONAL PULSE JET EJECTOR MANIFOLD

Edward M. McWhorter, 6931 Greenbrook Cir., Citrus Heights, Calif. 95610

Filed Dec. 12, 1979, Ser. No. 102,910
Int. Cl.[3] F02B *47/08*; F01N *3/10*
U.S. Cl. 123—568 **9 Claims**



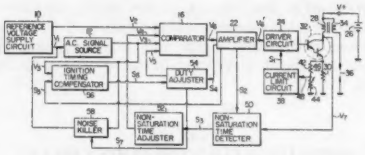
1. A cylinder of an internal combustion engine having a plurality of such cylinders, a piston slidably mounted in said cylinder, a side port in said cylinder located at a point corresponding to a position near the bottom stroke of said piston, a jet which connects said side-port to an air-chamber placing said side port in communication with said air chamber, said jet being fixedly mounted between said side port and said air chamber, an exhaust duct fixedly attached to said air chamber at a point opposite and axially aligned with the center of flow from said jet, said air chamber supplied from a channel, air flow in said channel flowing in opposite direction of exhaust flow from said jet, said exhaust duct in communication with an exhaust manifold said inlet of said manifold having slight protrusion to facilitate flow in said exhaust duct.

4,248,200

IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINE

Noboru Sugiura, Katsuta, and Seiji Suda, Mito, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Jun. 4, 1979, Ser. No. 44,998
Claims priority, application Japan, Jun. 2, 1978, 53/65766
Int. Cl.[3] F02P *3/04*
U.S. Cl. 123—644 **4 Claims**



1. In an ignition system for an internal combustion engine, comprising an ignition coil including a primary winding and a secondary winding, and a DC power supply, the improvement further comprising:

means for generating an ignition timing signal in synchronism with the r.p.m. of said internal combustion engine;

an amplifier connected to the output terminal of said ignition timing signal generator means;

a driver circuit including first and second transistors, each of said first and second transistors including a collector, an emitter and a base, the collectors of said first and second transistors being connected to each other, the emitter of said first transistor being connected to the base of said second transistor, the base of said second transistor being connected to the output terminal of said amplifier;

a power transistor connected in series to the primary winding of said ignition coil, the base of said power transistor being connected to the collector of said second transistor, said power transistor being placed in selected one of on state, off state and non-saturated state according to the output level of said second transistor, said power transistor causing a current to flow from said DC power supply through said primary winding when said power transistor is in on state, said power transistor cutting off said current from said DC power supply when said power transistor is in off state, said power transistor limiting said current in said primary winding to a predetermined value when said power transistor is in non-saturated state;

a current detector operated in response to the current flowing through said primary winding; and

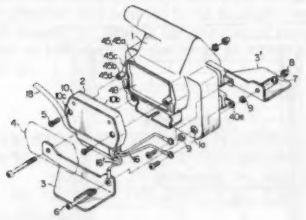
a current limiter circuit connected to the output terminal of said current detector, the output terminal of said current limiter circuit being connected to the base of said first transistor of said driver circuit, said current limiter circuit causing a current to flow to the base of said first transistor and thereby to change the output level of said second transistor when said current in said primary winding reaches a predetermined value, thus turning on said power transistor in non-saturated state.

4,248,201

MOLDED IGNITION DEVICE

Mitsukuni Tsutsui, Nakamachi; Takashi Yoshinari, Katsuta; Toshiaki Iikubo, Hitachi; Kazuhiko Kawakami, and Noboru Sugiura, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Sep. 29, 1978, Ser. No. 946,859
Claims priority, application Japan, Sep. 30, 1977, 52-116769
Int. Cl.³ F02P 3/04
U.S. Cl. 123—647 **13 Claims**



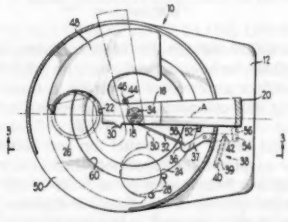
1. In a molded ignition device comprising:
an iron for forming a magnetic circuit;
a primary coil wound around said iron core;
a secondary coil wound around said iron core;
a high voltage terminal for withdrawing a high voltage;
a high voltage lead means for connecting said high voltage terminal to one end of said secondary coil;
a synthetic resin layer for covering said iron core and said primary and secondary high voltage terminals, electric fields being generated around the said coils;
a metal case with an outer frame;
integrated circuit means which is fixed at one surface to the inner surface of said metal case;
means forming a space between the other surface of said circuit means and the outer surface of said synthetic resin layer; and
means for attaching said metal case to said synthetic resin layer,
the improvement comprising:
means to substantially isolate the circuit means from said electric fields, said means comprising
an earth electrode disposed between said outer surface of said synthetic layer and said space.

4,248,202

DISC LAUNCHER

Eugene Jaworski, Park Ridge, and Jeffrey D. Breslow, Highland Park, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Dec. 11, 1978, Ser. No. 968,125
Int. Cl.³ F41B 7/08
U.S. Cl. 124—16 **18 Claims**



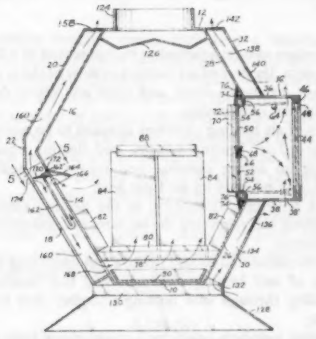
7. A toy launcher for propelling disc-like projectiles therefrom, comprising:
a housing;
rotatable loading means disposed at least partially within said housing for moving a disc-like projectile along a first path of travel from a loading position to a launching position to be propelled from said launcher; and
propelling means is cocked in response to movement of said loading means within said housing to enable said propelling means to store energy to enable it to propel a disc projectile, positioned in said launching position, to be propelled from said launcher along a second path of travel.

4,248,203

WOOD BURNING STOVE

Allan C. Willson, P.O. Box 65, Mill City, Oreg. 97360

Division of Ser. No. 836,502, Sep. 26, 1977, Pat. No. 4,136,662.
This application Sep. 28, 1978, Ser. No. 946,708
Int. Cl.³ F24C 1/14
U.S. Cl. 126—77 **5 Claims**



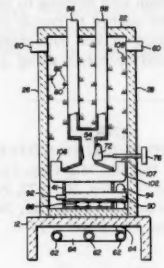
1. In a stove for burning solid fuel on a grate located above the bottom wall of the stove and having a front end wall provided with an access opening releasably closed by an access door and a front side wall adjacent said front end wall, the combination therewith of fire viewing means comprising:
(a) a viewing box intermediate the vertical ends of the front side wall communicating at its inner end with the interior of the stove above the fuel-supporting grate for viewing fire within the stove,
(b) a transparent window closing the outer end of the viewing box,
(c) closure means in the viewing box movable between a position closing the viewing box and a position opening the viewing box for viewing fire within the stove, the closure means comprising:
(1) a pair of doors disposed one above the other and traversing the width of the viewing box, and
(2) horizontal hinge means mounting the upper end of the upper door and the lower end of the lower door for swinging movement of the doors about horizontal axes between a viewing box closing position wherein the lower end of the upper door and the upper end of the lower door are disposed adjacent each other and a viewing box opening position wherein the lower end of the upper door is disposed adjacent but spaced inwardly of the upper end of the window and the upper end of the lower door is disposed adjacent but spaced inwardly of the lower end of the window, and
(d) air opening means in the viewing box adjacent the upper and lower ends of the window for directing outside air along the inner surface of the window in both open and closed positions of the doors, the air entering the lower air opening means and exiting the upper air opening means when the doors are in closed position.

4,248,204

SOLAR ROCK FIREPLACE HEATING SYSTEM

Herman D. Rowe, 3148 Glouchester, Troy, Mich. 48084

Filed Feb. 9, 1979, Ser. No. 10,715
Int. Cl.[3] F24B *7/00*; F28D *13/00*
U.S. Cl. 126—121 **10 Claims**



1. A fireplace system adapted to be connected to a forced air heating system, the forced air heating system of the type which includes hot air outlet ducts and cold air return ducts, the fireplace system comprising:

an enclosed air heating chamber adapted to be connected to the forced air heating system, said heating chamber including an access opening and means for sealing said opening to provide an air tight seal;

a firebox positioned interiorly of the heating chamber for containing and confining the burning of combustible material therein;

flue means connected to said firebox and extending along the length of said heating chamber, said flue means further extending through said heating chamber into the atmosphere;

heat storing members positioned exteriorly of both said flue means and said firebox and interiorly of said heating chamber;

said heat storing members heated by the combustion of material in said firebox; and

said heat storing members for heating air in said heating chamber;

said heating chamber including a fresh air inlet; and

means for introducing fresh air from said inlet into said heating chamber and into said forced air heating system for maintaining said heating chamber and said forced air heating system under slight positive air pressure; and

said heating chamber including a plurality of hollow pipes positioned adjacent the bottom of said firebox, said hollow pipes being substantially enclosed by a manifold, said hollow pipes extending through said firebox with both ends of each of said hollow pipes in the heating chamber so that air is heated in the pipes during the burning of combustible material in the firebox, said fresh air inlet being in communication with said manifold and said plurality of hollow pipes, and said manifold supporting said combustible material during the burning thereof such that the air within said pipes is heated to a high temperature.

4,248,205

VARIABLE DRAFT PROVIDER FOR FIREPLACE

Percy L. Saunders, 893 Regatta Rd., Charleston, S.C. 29412

Filed Jan. 29, 1979, Ser. No. 7,235
Int. Cl.[3] F24B *13/02*
U.S. Cl. 126—143 **7 Claims**

1. A device for providing air for a fireplace with a clean-out opening comprising a portable structure placed over the clean-out opening of said fireplace comprising:

(a) a horizontal planar top surface;

(b) a first vertical outer side wall facing an interior wall of said fireplace connected to said top surface,

(c) a second vertical outer side wall facing an interior wall of said fireplace connected to said top surface;

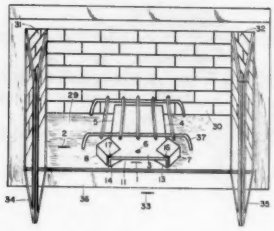
(d) a first opening in said first outer side wall;

(e) a second opening in said second outer side wall;

(f) a first outer side wall adjustable cover connected to said top surface operative to cover said first opening in said first outer side wall;

(g) a second outer side wall adjustable cover connected to said top surface operative to cover said second opening in said second outer side wall;

(h) securing means operative to secure said first outer side



wall adjustable cover and said second outer wall adjustable cover to said top surface;

(i) an angle blocking front wall secured to said top surface, said first outer side wall, and said second outer side wall;

(j) an open back, said open back being defined by said top surface, said first outer side wall and said second outer side wall, and being closed by placing said portable structure against the rear wall of the fireplace;

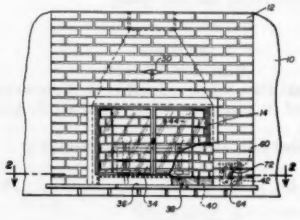
whereby air flowing from said clean-out opening of said fireplace flows into said portable structure and out of said first opening and said second opening of said portable structure thereby providing air for said fireplace.

4,248,206

AUXILIARY DRAFT DEVICE FOR FIREPLACE

George F. Orthey, Jr., R.D. #1, Newport, Pa. 17074

Filed Nov. 8, 1979, Ser. No. 92,480
Int. Cl.[3] F24B *1/18*
U.S. Cl. 126—143 **5 Claims**



1. For use with a conventional fireplace having a hearth, an auxiliary draft device adapted to discharge a substantially even curtain of outdoor air directed upwardly in front of the fireplace opening and comprising in combination, an elongated sheet metal air-distributing shell composed of fixed sidewalls of uniform limited height and parallel top and bottom walls of similar shape adapted to be supported horizontally and solely by resting upon a hearth directly in front of and extending across the front opening of said fireplace adjacent the hearth, air discharge opening means in said top wall extending along substantially the entire length of said shell, an extension projecting horizontally outward from one end of said shell and comprising a plenum chamber communicating with the interior of said shell, said air-distributing shell gradually decreas-

ing in width from said one end of said shell adjacent said plenum chamber toward the other end and is closed at said other end and said air-discharge opening means being arranged to provide an air curtain of substantially even volume across the entire front of a fireplace, horizontal conduit means connected at one end to said plenum chamber and extending laterally therefrom, said conduit means being adapted to extend along one end of said fireplace and through the exterior wall of a room in which said fireplace is located to communicate with outdoor air, an adjustable exterior damper adjacent the outer end of said conduit means, and adjusting means connected at one end to said damper and the other end being adjacent said plenum chamber and adapted to be manually operated to adjust said damper to regulate the quantity of outdoor air to be delivered to said shell for discharge to effect said curtain of outdoor air.

4,248,207

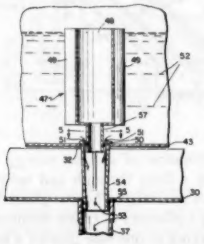
STOVE, STEAM COOKING AND HEATING SYSTEM

Herbert Morrow, R.D. 1, Greenwich, Ohio 44837

Filed Apr. 27, 1979, Ser. No. 34,022

Int. Cl.[3] F24H *1/18;* **F24C** *13/00;* **F24D** *1/00*

U.S. Cl. 126—348 **2 Claims**



1. A portable knock down stove, steam cooking and heating system comprising a supporting frame structure including legs, a pair of circular horizontally disposed hollow body members mounted above said supporting frame, a conduit interconnecting said body members together, a hollow container on at least one of said body members, a pipe like member depending from said container, there being apertures in the central portion of said body members for selectively receiving said last named hollow member, a bushing assembly including a depending neck, a plurality of spaced apart tubular members affixed to said bushing assembly, there being a space betweeen the lower ends of said bushing assembly and the bottom of said container, said container adapted to hold a quantity of water therein, there being a plurality of spaced apart slots permitting the water to flow downwardly therethrough, a single conduit means for the passage therethrough of water, a collector on the lower end of said conduit means, and said collector adapted to be placed in a heat source.

4,248,208

CATALYTICALLY HEATED CURLING DEVICE WITH AUTOMATIC TEMPERATURE CONTROL

Walter J. Diederich, West Newbury, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Jun. 11, 1979, Ser. No. 47,351

Int. Cl.[3] A45D *1/04*

U.S. Cl. 126—409 **11 Claims**

7. A hand-held curling iron comprising:

a tubular body defining a heating chamber therein and having first and second ends and a hair winding portion disposed between said first and second ends and surrounding said heating chamber;

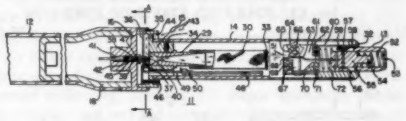
heating means including a catalyst means disposed in said heating chamber;

a housing mounted proximate said second end of said tubular body and forming a handle including fuel supply means for storing a fuel;

vaporizing means positioned between said fuel supply means and said heating means for vaporizing the fuel;

a movable nozzle means generally coextensive with said tubular body and positioned between said vaporizing means and said heating means for accellerating said vaporized fuel;

tube means generally coextensive with said tubular body and positioned between said nozzle means and said heating means for mixing said vaporized fuel with air and for supplying a vaporized fuel/air mixture to said catalyst means; and



temperature control means including a bimetal element means proximate said heating chamber and further including control linkage means connected between said bimetal element and said nozzle means for controlling the axial displacement of said nozzle means thereby controlling the flow of the vaporized fuel, wherein said bimetal element means bends in the presence of increased temperature of said heating chamber until said bimetal element means is physically obstructed from bending by the inside of said heating chamber, when so obstructed further temperature increases of said heating chamber causes said control linkage means to axially displace said moveable nozzle toward said fuel supply means.

4,248,209

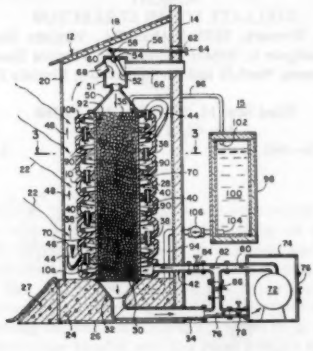
COUPLED TOROIDAL SOLAR COLLECTOR

Kurt J. Wasserman, P.O. Box 77, Port Jervis, N.Y. 12771

Filed Mar. 14, 1980, Ser. No. 130,547

Int. Cl.[3] F24J *3/02;* **F28F** *9/26*

U.S. Cl. 126—417 **11 Claims**



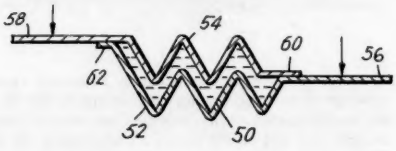
6. A solar collector apparatus comprising:

a vertical stack of generally toroidal, hollow, substantially, elastomeric, vehicular tire-like members for absorbing and being thereby heated by solar radiant energy; and

conduit means intercepting the members of said stack at angularly spaced apart locations, said conduit means being directed for serially coupling together the hollow toroidal interiors of the members of said stack, said conduit means defining a first fluid path passing angularly and serially through said hollow toroidal interiors of the members of said stack in heat exchange relationship with the interiors

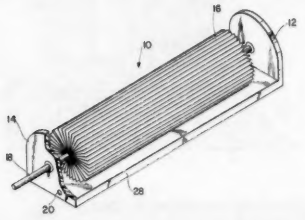
of said members; top and bottom portions of said conduit means being at opposite extremes of said first fluid path, said conduit means intercepting each member at two said locations which are angularly spaced apart about 180 degrees, whereby said first fluid path includes two different angularly spaced apart, angularly directed fluid paths through the hollow toroidal interior of each member, each of said two angularly directed fluid paths being about 180 degrees in extent.

4,248,210
HEAT-TRANSFER COMPONENT
Hugh R. Ortega, 280 Louis Ave., S. Floral Park, N.Y. 11001
Filed Feb. 9, 1979, Ser. No. 10,758
Int. Cl.³ F24J *3/02;* **F24F** *3/04;* **F24B** *1/06*
U.S. Cl. 126—444 **19 Claims**



1. Heat transfer apparatus comprising at least one tubular member including a plurality of perimetral sections connected together in liquid tight relation to form a liquid passage, and fins respectively in extension of each of said sections and monolithically related thereto whereby to optimize heat-exchange between the fin and related section, each said fin having opposite faces, each of said faces of each of said fins being at least substantially free of substantial contacting engagement by any fin on any other of the said section whereby each said fin may be directly exposed to a heat source for heating thereby and whereby each said section is directly heated by conduction of heat from a corresponding one of said fins so that at least substantially the entire tubular member is directly heated by conduction from said fins.

4,248,211
STELLATE SOLAR COLLECTOR
Robert R. Womack, 5513 Nashua Rd., Virginia Beach, Va. 23462, assignor to Robert R. Womack, Virginia Beach; Stanley M. Jones, Norfolk and W. Shanks, Jr., Virginia Beach, all of, Va.
Filed Sep. 14, 1979, Ser. No. 75,560
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—446 **14 Claims**



1. A solar collector device of the type adapted for heating water comprising:

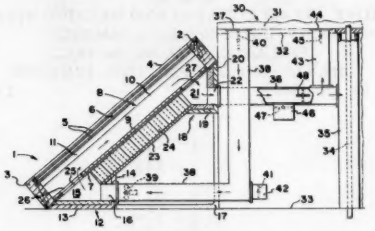
A. A base;

B. A perforated conduit supported in said base;

C. An elongated, opaque collector drum rotatably mounted upon said conduit, said drum having a stellate cross-section defining a series of radially extending vanes abutting at their tips to define drain apertures and a hollow interior, encompassing a mid-portion of said perforated conduit; and

D. A source of fluid connected to said conduit, such that fluid is expelled through the perforated portions of said conduit onto the interior surfaces of said vanes, so as to rotate said drum while being heated by conductive contact with the vane interior surfaces, as well as by convection and radiation within the hollow interior.

4,248,212
SOLAR HEATING APPARATUS
Norman D. Stevens, 1600 S. Farragut St., Bay City, Mich. 48706
Filed Oct. 19, 1978, Ser. No. 952,633
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—449 **8 Claims**



1. The combination of a solar energy heating unit and a building having a floor through and below which plumbing lines extend downwardly to below ground level, said heating unit comprising a plurality of frame members together forming an enclosure having at one side thereof a sunlight transmitting wall and a base spaced from and opposing said wall; a heat absorbing member pleated to form a plurality of uniform, flat webs seated on said base and alternating with uniform, upstanding, imperforate conical ribs extending toward but terminating short of said wall to define between said wall and said member a chamber, said ribs being sealed at their ends to form dead air spaces between said ribs and said base; first air duct means communicating with said chamber adjacent one end thereof for delivering air into said chamber; second air duct means communicating with said chamber at the opposite end thereof for conducting air out of said chamber; means for establishing air flow through said chamber; insulated conduit means encircling said plumbing lines and spanning the distance between said floor and ground level; and air passage means coupling said second duct means and said insulated conduit means for discharging heated air from said chamber to said insulated conduit means.

4,248,213
ARTICULATED OPTICAL COUPLER
John K. Landre, La Honda, Calif., assignor to Syn-Optics, Sunnyvale, Calif.
Filed Aug. 13, 1979, Ser. No. 66,266
Int. Cl.³ A61B *1/06*
U.S. Cl. 128—6 **16 Claims**

1. An articulated coupling for transmitting optical information between an endoscope and an image receiving means, the endoscope having a first optical axis, the endoscope being capable of roll rotation about a roll axis parallel to said first optical axis pitch rotation about a pitch axis that is horizontal and perpendicular to the endoscope axis, and yaw rotation about a yaw axis perpendicular to said pitch and roll axes, the image receiving means having a second optical axis that is normally vertical, comprising:

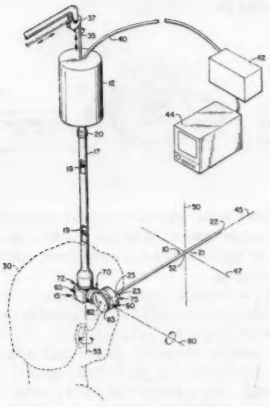
first deflection means for deflecting light travelling along said first optical axis through a right angle about said yaw

axis to emerge along a third optical axis that it parallel to said pitch axis;

second deflection means for deflecting light travelling along said third optical axis to emerge along said second optical axis;

first rotatable bearing means between said first and second deflection means to permit relative rotation of said first and second deflection means about said third optical axis;

second rotatable bearing means between said second deflection means and said image receiving means to permit



relative rotation of said second deflection means and said image receiving means about said second optical axis; and

compensation means responsive to relative rotation between said first and second deflection means about said third optical axis for rotating said image receiving means about said second optical axis relative to said second deflection means such that image rotation due to rotation of said endoscope about said pitch axis is compensated by said rotation of said image receiving means relative to said second deflection means.

4,248,214

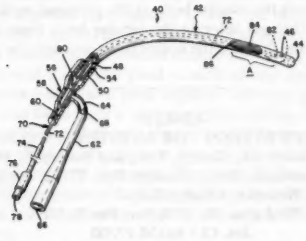
ILLUMINATED URETHRAL CATHETER

Richard E. Hannah, Springrove, Ill., and Robert S. Kish, 211 W. Beaver Ave., State College, Pa. 16801, assignors to Robert S. Kish, State College, Pa.

Continuation-in-part of Ser. No. 849,092, Nov. 7, 1977, abandoned. This application May 22, 1979, Ser. No. 41,499

Int. Cl.³ A61B *1/06, 1/30*

U.S. Cl. 128—7 **10 Claims**



1. An illuminated drainage catheter including a flexible transparent catheter tube having distal and proximal ends and an internal drainage lumen extending the length thereof and open at the proximal end of the tube and at or adjacent the distal end of the tube; a drainage adapter having an internal collecting portion with major and minor axially aligned apertures located on opposite sides of said portion, and drainage member extending laterally of said axis including an aperature at the free end thereof adapted to be connected to a liquid drainage receptacle and a passage extending from the collecting portion to such aperature; a fiber optic member including an elongate flexible light transmitting fiber optic having proximal and distal ends, a light emitting surface extending around the circumference of a length of the fiber optic adjacent the distal end thereof, a mounting member on the proximal end of the fiber optic for attachment to a light source whereby light from the source is transmitted to the fiber optic, along the fiber optic and is emitted from the area of light transmitting surface radially outwardly of the fiber optic, a fluid tight connection joining the proximal end of the catheter tube to the major aperature of the drainage adapter; the proximal end and mounting member of the fiber optic member being located outwardly of the catheter tube and drainage adapter with the fiber optic extending therefrom through the minor aperature, the internal collecting portion and major aperature of the drainage adapter and into and along the interior of the catheter tube with the distal end of the fiber optic located adjacent the distal end of the tube and the light transmitting surface extending along a length of the tube; the interior surface of the minor aperature resiliently engaging the exterior surface of the fiber optic to form a fluid tight sliding joint therebetween thereby the fiber optic may be axially moved with respect to the minor aperature to move the light transmitting surface along the catheter tube to a desired location while maintaining a fluid tight seal between the fiber optic and the minor aperature so that liquid flowing along the lumen is discharged through the drainage member.

4,248,215

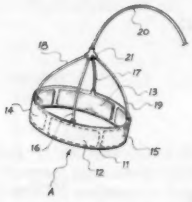
CRANIAL TENSION RELIEVER

Robert D. Bleakley, Sunnyside, Forrest Reefs Rd., Millthorp, N.S.W., Australia

Continuation of Ser. No. 774,108, Mar. 3, 1977, abandoned. This application Apr. 2, 1979, Ser. No. 26,029

Int. Cl.³ A61H *7/00, 23/04*

U.S. Cl. 128—60 **5 Claims**

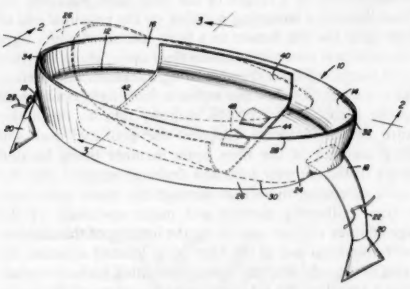


1. A method for relieving cranial tension comprising encircling the cranium with a head band having an inner face adapted to be positioned alongside the cranium, having a first pair of oppositely located lateral expandable compartments on the inner face of the head band, and an anterior and posterior pair of expandable compartments on the inner face of the head band, securing the head band on the cranium in an encircling position in a plane parallel with the plane defined by the eyes and ears and to minimize lengthwise expansion and contraction, sequentially introducing fluid under pressure into only one of said pairs of compartments for applying pressure only in the direction perpendicular to the surface of the portion of the head engaged by said one pair of compartments while removing fluid from only the other of said pairs of compartments for depressurization and introducing fluid under pressure into only the other of said pairs of compartments for applying pressure only in the direction perpendicular to the surface of the portion of the head engaged by said other pair of compartments while removing fluid from said one pair of compartments for depressurization.

4,248,216
DISPOSABLE STRETCHER CARE SHEET

Georgia E. Glintz, 2909 University Ave., Des Moines, Iowa 50311

Filed May 16, 1979, Ser. No. 39,667
Int. Cl.[3] A61F 13/00
U.S. Cl. 128—132 D 14 Claims

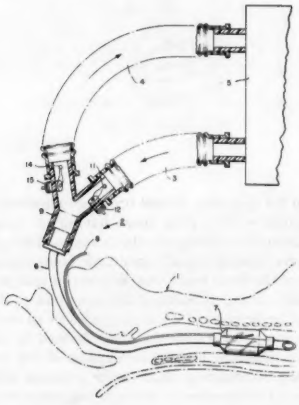


1. A patient care sheet for containing a patient, said care sheet being flexible and constructed of water impervious material and defining an upwardly opening receptacle including a bottom wall and upstanding peripheral sides, said receptacle being generally ellipsoidal in plan shape, said upstanding peripheral sides including successive first and second marginal zones selectively foldable inwardly and outwardly relative to the peripheral sides of said receptacle, said marginal zones tapering in width, oppositely, toward opposite ends of said receptable, the opposite ends of said receptable including flexible drain tube portions opening outwardly therefrom.

4,248,217
INHALATION HEATER CONTROL

A. Glen Brisson, Arlington Heights, Ill., assignor to Respiratory Care, Inc., Arlington Heights, Ill.

Filed Oct. 30, 1979, Ser. No. 89,320
Int. Cl.[3] A61M 16/00
U.S. Cl. 128—204.17 7 Claims



1. An inhalation heater control comprising:

means providing separate closed respiratory airway paths to and from a patient;

electric heater means to provide heat in the inhalation airway path;

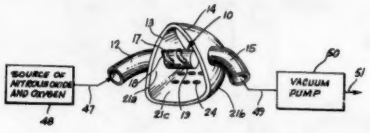
means in each of the airway paths to respectively sense inhalation temperature and exhalation temperature; and

means responsive to said sensing means to cause the electric heater means to emit heat in the inhalation path in such degree that the inhalation temperature tracks the exhalation temperature within a predetermined temperature difference.

4,248,218
GAS ADMINISTRATION SCAVENGING MASK

Charles M. Fischer, 330 Twin Peaks La., Alamo, Calif. 94526

Filed Sep. 22, 1978, Ser. No. 944,713
Int. Cl.[3] A61M 15/08
U.S. Cl. 128—204.18 4 Claims



1. A scavenging mask apparatus for administrating gas to a patient and for scavenging exhaled gas and lost gas via a source of vacuum to an external point remote from said patient, the apparatus comprising:

A. a cup-like nosepiece arranged to fit over the patient's nose, the nosepiece shaped to form a seal between the rim of the nosepiece and the patient's face;

B. A nasal cannula, disposed within and attached to the nosepiece, for delivering gas to the patient's nostrils;

C. first conduit means connected to the nasal cannula for directing gas through the nosepiece, into the nasal cannula, and to the patient's nostrils; and

D. second conduit means connected to the nosepiece and to said source of vacuum for conducting gas so that exhaled gas and lost gas inside the nosepiece is conducted therefrom to said external point through the second conduit means,

wherein said first conduit means is a tubular extension integral to and extending outwardly from one lateral wall of said nosepiece, said second conduit means is a tubular extension integral to and extending outwardly from the opposite lateral wall of said nosepiece, and said nasal cannula comprises:

a. a connector tube, open at both ends and formed with a ferrule on each end thereof, the connector tube releasably communicating at one end thereof with the first conduit means;

b. a tubular body having an open end and a closed end, the tubular body releasably communicating at the open end thereof with the other end of the connector tube; and

c. two nostril tubes, spaced apart and disposed in the patient's nose at the distal ends of each tube, and communicating with the tubular body at the proximal ends of each tube so that gas entering the tubular body from the connector tube flows to the nostril tubes and into the patient's nostrils.

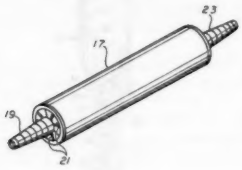
4,248,219
SCAVENGER SYSTEM FOR ANESTHESIA CIRCUITS

Robert W. Moore, Jr., Crosby, Tex., and Stanley C. Weinrich, 618 Diamondhead Blvd., Crosby, Tex. 77532, assignors to Stanley C. Weinrich, Crosby, Tex.

Filed Jun. 20, 1979, Ser. No. 50,328
Int. Cl.[3] A61M 17/00
U.S. Cl. 128—205.17 5 Claims

1. In a scavenger for an anesthesia circuit, a breathing bag equipped with a narrow neck, and a passageway therethrough, a valve mounted in the said neck of said bag, said valve having a tubular male member and a tubular female member in rotating telescoping relation, annular raised portions on said male member and female member for tactile reference to the posi-

tion of the members relative to each other, a cutaway portion in a sidewall of said male member at the inserted end thereof, a parabolic passageway in a side wall of said female member adjacent said cutaway portion and which, by rotation of one of said members will be brought into and out of alignment with



said cutaway portion of said male member, an enlarged chamber in flow alignment with said parabolic passageway, and a flexible hose leading from said parabolic passageway to said enlarged chamber, and means for maintaining a vacuum on said chamber.

4,248,220

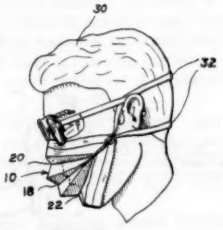
DISPOSABLE DUST RESPIRATOR

Willard C. White, Huntington, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 926,489, Jul. 20, 1978, abandoned. This application Sep. 10, 1979, Ser. No. 74,210

Int. Cl.³ A62B *7/00*

U.S. Cl. 128—206.19 **7 Claims**



1. A dust respirator adapted to be worn upon the face of a wearer, the respirator comprising:

a. an initially generally planar surface of filter medium, having a vertical and a horizontal dimension, being centrally folded in the horizontal direction to form upper and lower opposed faces; having at least one horizontal pleat essentially central to said opposed faces to foreshorten the filter medium in the vertical dimension, having at least one additional horizontal pleat in each of said opposed faces wherein said central pleat together with said pleats in the opposed faces form a self-supporting pocket, wherein the central pleat is shorter in the horizontal dimension relative to the pleats in the opposed faces which are each shorter in the horizontal dimension relative to the maximum horizontal dimension of the filter medium, having the opposed faces joined vertically at the extreme ends of each of said pleats;

b. a yieldable deforming conforming means horizontally extending at least partially across the upper opposed face capable of conforming the opposed face to the nasal contour of the wearer; and

c. attachment means for releasably securing the respirator upon the face of the wearer.

4,248,221

ENDOBRONCHIAL TUBES

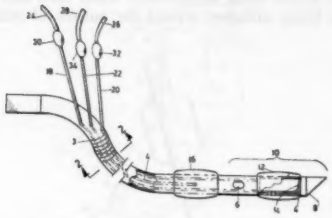
Ronald Winnard, Johannesburg, South Africa, assignor to Latex Products (Proprietary) Limited, Johannesburg, South Africa

Filed Aug. 25, 1978, Ser. No. 936,690

Claims priority, application South Africa, Aug. 26, 1977, 77/5179

Int. Cl.³ A61M *25/00, 16/00*

U.S. Cl. 128—207.15 **7 Claims**



1. A flexible single lumen endobronchial tube having an annular tube wall and comprising:

an endotrachial tube portion;

an endobronchial tube portion sized for placement in one of the bronchi, said endobronchial portion directly communicating with and being an integral extension of said endotrachial portion and having an open end;

first expansible means on the outer surface of said tube for anaesthesiologically sealing the tube in the trachea;

second expansible means spaced from said first means on the outer surface of the tube for anaesthesiologically sealing the tube in one bronchus so that said open end opens into said one bronchus;

port means formed in the tube wall of said endobronchial portion between said first and second expansible means to communicate with the other bronchus; and

adjustable lumen-blocking means located in the lumen between the port and the open end, and being adjustable between a position in which the lumen and the bronchus in which the said endobronchial portion is located is blocked and a position in which said lumen and bronchus are open, said port being in communication with the other bronchus in both positions of said adjustable means.

4,248,222

ENDOTRACHEAL TUBE HAVING A RELIEF VALVE

Friedrich Jaeger, Oberursel, and Ludwig Lammers, Idstein, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 23, 1979, Ser. No. 5,803

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1978, 2803094

Int. Cl.³ A61M *16/00*

U.S. Cl. 128—207.15 **11 Claims**

1. An endotracheal tube comprising:

a tubular member having a proximate and a distal end and a first lumen passing therethrough between said proximate and distal ends;

an inflatable low pressure sleeve attached to said tubular member;

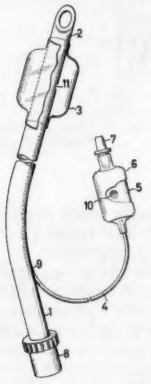
an auxiliary tube member having a first open end, a second open end and a second lumen passing therethrough between the first and second open ends, said first open end communicating with said inflatable low pressure sleeve;

a hollow body having continuous passage therethrough between a third open end and a fourth open end, said third open end communicating with said second open end of said auxiliary tube member;

non-return valve means connected to said hollow body in said fourth open end for allowing inflation of the low

pressure sleeve through said fourth open end, said hollow body and second lumen and for preventing deflation of said low pressure sleeve through said fourth open end; and

relief valve means for allowing the deflation of said low pressure sleeve to a defined pressure when the pressure within said low pressure sleeve exceeds the defined pressure, said relief valve means including said hollow body being provided with an opening between said third and fourth open ends and an elastic tubular skin means, said skin means being substantially wider than said opening and being stretched around the outside of said hollow



body for sealing said opening in the hollow body when the pressure within the pressure sleeve is below a defined pressure, for lifting away from the hollow body and allowing deflation of the low pressure sleeve to the defined pressure when said pressure in the low pressure sleeve exceeds the defined pressure and for providing resilient means for preventing deflation of the low pressure sleeve to a pressure below the defined pressure by resealing itself over the opening when the pressure in said low pressure sleeve is reduced to the defined pressure, whereby the pressure within said low pressure sleeve is maintained at the defined pressure.

4,248,223

SELF-PRIMING PARENTERAL ADMINISTERING APPARATUS

Charles R. Turner, 1106 Paper Mill Rd., Philadelphia, Pa. 19118, and Roger S. Turner, 620 Carpenter La., Philadelphia, Pa. 19119

Filed Mar. 20, 1978, Ser. No. 888,008
Int. Cl.[3] A61M *5/00*
U.S. Cl. 128—214 C **27 Claims**

1. Apparatus for the parenteral administration of a fluid to a patient, the combination comprising:

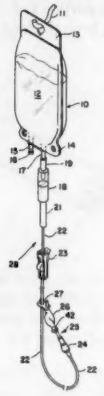
a primary fluid supply container having at least one fluid outlet,

a fluid in said container,

a flexible conduit having an inlet end and an outlet end connected at said inlet end to said fluid outlet,

means for automatically purging air from said flexible conduit and simultaneously filling said conduit with fluid ready for use,

said means for automatically purging air from said flexible conduit comprising a fluid receiver connected to the outlet end of said conduit for automatically enabling a predetermined amount of primary fluid to flow into said flexible conduit in a manner which simultaneously purges the air from said flexible conduit, and includes normally closed valve means for initiating the flow of said primary fluid into said flexible conduit, and



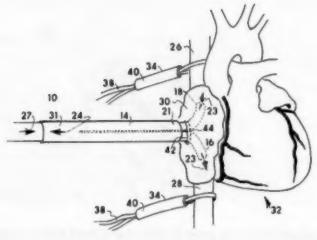
said valve means being on said flexible conduit adjacent said primary fluid supply container adapted to be opened to initiate the automatic purging of said apparatus.

4,248,224

DOUBLE VENOUS CANNULA

James W. Jones, 4108 James Dr., Metairie, La. 70003

Filed Aug. 1, 1978, Ser. No. 929,999
Int. Cl.[3] A61M *1/03, 5/00*
U.S. Cl. 128—214 R **19 Claims**



1. A cardio pulmonary bypass venous cannula apparatus, comprising:

a. a fluid conveying tube, said tube providing an upper proximate tube portion communicating with a pair of lower distal tube branch members, each of said lower distal tube branch members being movable into an angular lateral position with respect to said upper tube with one of said tube branch members being insertable into the inferior vena cava and the other of said tube branch members being insertable into the superior vena cave;

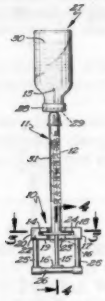
b. means slideably surrounding the exterior surface of said tube branch members for urging each of said lower distal tube branches into a collapsed aligned position with said upper tube portion allowing said distal tube branches to be inserted through a single surgical opening in the atrium of a patient during a cardio pulmonary bypass; and

c. closure means associated with said upper tube for forming a substantially fluid tight enclosure between said upper proximate tube portion and the walls of the single surgical opening into which said tube is inserted during the cardio pulmonary bypass.

4,248,225
GAUGE DEVICE FOR HYPODERMIC SYRINGES

Fred J. Moore, 1264 N. Dale St., St. Paul, Minn. 55117

Filed Feb. 9, 1979, Ser. No. 10,528
Int. Cl.[3] A61J 1/06
U.S. Cl. 128—218 C 1 Claim



1. A gauge device for a hypodermic syringe for use by persons with impaired vision, the syringe including an elongate barrel having a needle at one end and having a flange projecting laterally outwardly from the other end thereof, an elongate plunger extending into the barrel and projecting outwardly therefrom, the plunger being extensible into and retractable from the barrel, said gauge device comprising:

a generally rectangular shaped barrel engaging member having opposed end surfaces, opposed side surfaces, and opposed upper and lower surfaces, an arcuate recess in said barrel engaging member extending inwardly from one side surface thereof, a slot in said barrel engaging member extending inwardly from said one side surface and completely receiving therein the flange of the barrel of the syringe when the barrel is positioned within the recess,

a pair of similar spaced apart, elongate, rigid connecting members each being rigidly connected at one end thereof to the barrel engaging member adjacent one of said end surfaces and projecting downwardly from said lower surface,

an elongate plunger engaging element extending between and being rigidly connected to the other end of each of said connecting members and being disposed in obstructing relation with the outer end of the plunger of the syringe to limit retractive movement of the plunger when the barrel engaging member is applied to the syringe, the plunger of the syringe being unobstructed in its movement between a retracted position when the outer end of the plunger engages the upper surface of the plunger engaging element, and a fully extended position, whereby a user when gripping the gauge device with one hand will obstruct the slot in the barrel engaging member the plunger of the syringe will be retracted from the fully extended position, to engage the plunger engaging member, then extended into the barrel after the needle of the syringe is inserted into a container containing a drug, and the plunger may thereafter be retracted to engage the plunger engaging member so that a dosage of predetermined volume is obtained,

and a raised dosage designating number on the side surface of said barrel engaging member opposite the slotted side surface, said raised dosage designating number being capable of being perceived by touch by a user and indicating the dosage when the plunger of the syringe is in the retracted position.

4,248,226
AUTOMATIC DOUCHE MECHANISM

Robert L. Pitchford, Jr., 2892 Bayard St., East Point, Ga. 30344

Filed Oct. 11, 1979, Ser. No. 83,690
Int. Cl.[3] A61M 3/00
U.S. Cl. 128—229 2 Claims

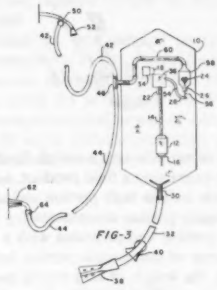


FIG-3

1. An automatic douche mechanism comprising:

a reservoir having a front a rear wall and a top;

means for receiving water as a component of a douche fluid from conventional domestic sources into said reservoir;

dispensing outlet means attached to said reservoir so as to accept and dispense said douche fluid therefrom;

a flexible tube attached to said dispensing outlet means for conducting said douche fluid to a user's body;

a clamp attached to said flexible tube near to said dispensing outlet and operable to interrupt the flow of said douche fluid to said user's body;

a nozzle attached to said flexible tube at an end thereof and distal to said dispensing outlet means so as to be separated therefrom by said clamp;

a valve fluidically communicating with said means for receiving water from coventional domestic sources, said valve having:

a valve body;

plunger valve means in said valve body;

a valve stem in said valve body one end of which is attached to said plunger valve means;

a valve seat operable to accept seating of said plunger valve thereupon;

a control arm attached to the other end of said valve stem operable to seat and unseat said plunger valve to said valve seat;

actuating float and rod means for operating said plunger valve means, said float and rod means having:

a rod also having an uppermost end attached to an actuating float number, itself attached to said control arm;

a float limit stop attached near the lowermost end of said rod;

a float slideably attached to said rod and constrained by said float limit stop;

control mechanism constraining said actuating float and rod means comprising:

a spring loaded control pin engageable upon a top surface portion of said actuating float member so as to constrain its upward motion;

a spring housing retaining a spring for spring loading said spring loaded control pin;

releasing mechanism for releasing said constraint imposed upon said actuating float member by said spring loaded control pin so as to permit upward motion of said actuating float member including

a release pin having a control pin actuator and a retaining pin.

4,248,227

FLUID UNIT DISPENSING DEVICE

Ralph H. Thomas, Clark, N.J., assignor to Bristol-Myers Company, New York, N.Y.

Filed May 14, 1979, Ser. No. 38,989
Int. Cl.[3] A61M *1/00*
U.S. Cl. 128—232 **4 Claims**

1. As an article of manufacture a sealed, flexible unit dosage dispensing device containing a fluid product, said device comprising a squeezable hollow bulb portion and a generally hollow cylindrical nozzle portion communicating internally with said hollow bulb portion and provided with a nozzle orifice; the internal diameter of said nozzle portion being no smaller than 0.120 inches, the length of said nozzle portion being 1⅛ inches thereby being sufficient to reach at about least, and substantially no further than about the area of the rectal columns when inserted into the anal canal of a subject; the largest diameter of said hollow bulb portion being 0.750 inches thereby being sufficiently large to serve as a stop to prevent the insertion of the device too deeply into the anal canal; the terminal portion of said nozzle portion being rounded off to provide a smooth surface that extends down into the nozzle orifice; said dispenser being provided with a break-off tab to seal the terminal end of said nozzle, said tab being adapted to be removed from said nozzle to expose a terminal nozzle orifice whereby the contents of said dispenser can be dispensed through said orifice by squeezing said bulb portion; said break-off tab being provided with a step extending downwardly from the undersurface of said break-off tab, the outside diameter of said step being such that it fits into the terminal end of said nozzle portion; said step being joined to said nozzle inside said nozzle orifice whereby when said break-off tab is removed from said nozzle by a twisting motion, the roughened fracture line is within the nozzle orifice and out of any position which might tend to irritate the tissue when the dispenser is inserted into the anal canal.

4,248,228

DISPOSABLE ENEMA SYRINGE FOR ONE HAND USE

Jules Silver, Rte. 32, North Franklin, Conn. 06254

Continuation of Ser. No. 885,020, Mar. 9, 1978, abandoned. This application Oct. 19, 1979, Ser. No. 86,433
Int. Cl.[3] A61M *1/00*
U.S. Cl. 128—234 **8 Claims**

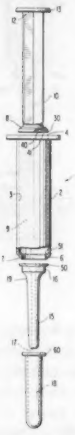
1. A disposable enema syringe for self-application and/or one hand use comprising:

(a) a barrel with a bore therein, said barrel having an open end with a transversely extending flange at least partially disposed about the open end and the barrel having a discharge end with a discharge orifice therein;

(b) a movable piston disposed within the bore whereby an enema fluid receiving cavity in the bore is defined by the space between the piston and the discharge end of the barrel;

(c) a plunger having one end operably connected to the piston and the other end extending out of the bore and terminating in a digit receiving pressure pad, the said pressure pad being at a distance from the said flange which is at least substantially equal to the distance of the said cavity between the piston and discharge end, and wherein the distance from the said flange to the said pressure pad being such that the syringe may be controllably grasped by one hand between the thumb and a finger around the barrel and next to the flange and the index or second finger on the said pressure pad;

(d) a cannula made of a soft and flexible thermoplastic material, having one end thereof directly connected to and retained in the discharge orifice of said barrel to provide a fluid seal between the cannula and the barrel and to provide fluid communication with said discharge orifice, and the other end having a cannula orifice, said cannula having a decreasing taper commencing from the end thereof connected to the discharge orifice of the barrel and ending with the cannula orifice, said cannula being sufficiently long that it may be inserted into the rectum with only one hand;



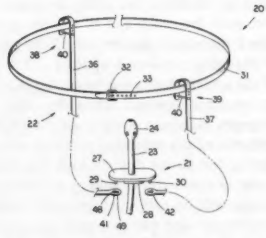
whereby the cannula may be inserted into the rectum and the enema fluid injected from the syringe into the rectum with the use of only one hand.

4,248,229

ENEMA TIP RETENTION APPARATUS

Roscoe E. Miller, 7400 W. 88th St., Indianapolis, Ind. 46278

Filed May 16, 1979, Ser. No. 39,280
Int. Cl.[3] A61M *3/00*
U.S. Cl. 128—245 **13 Claims**



1. An enema tip retention apparatus for retaining an inserted enema tip in a patient during the administering of an enema to the patient, and thereafter as desired for fluoroscopy examinations as well as repeated enema administering, said enema tip retention apparatus comprising:

a substantially flat mounting plate having a patient-facing surface and an opposite exterior surface and a first clearance aperture therethrough;

enema tube attachment means including a single-piece, adjustable, releasable clamp joined to said mounting plate on

said exterior surface and having a second clearance aperture disposed therethrough, said second clearance aperture being substantially coincident with said first clearance aperture, said releasable clamp includes a part-circular enclosing portion defining a part of said second clearance aperture and extending on one side into a deformable tab portion and extending on the opposite side into a locking portion cooperatively arranged with said deformable tab portion for varying the size of said second clearance aperture;

strap means securable to the body of the patient and having a retaining portion positionable adjacent the patient's rectum; and

retaining means joined to said mounting plate and disposed on opposite sides of said releasable clamp, said retaining means being suitably arranged for connection to the retaining portion of said strap means.

4,248,230

SYSTEM FOR THE CURE OF INTERNAL WOUNDS AND INFLAMMATION OF HUMAN BODY, OF THE DIATHESIS, OF INTERNAL WOUNDS AND INFLAMMATION OF OCULAR APPARATUS, AND FOR STRENGTHENING OF HEALING POWER OF THE DRUGS AND BRAIN

Rosolino Marinello, Viale L. da Vinci 4, Mantova, Italy

Filed Jul. 3, 1978, Ser. No. 921,549

Int. Cl.³ A61F *7/02*

U.S. Cl. 128—268 **8 Claims**

1. A composition of matter for aiding in the increase of blood flow to an internal injury, inflammation or diathesis consisting of one part of oil of mustard and from 50 to 150 parts of vegetable oil.

4,248,231

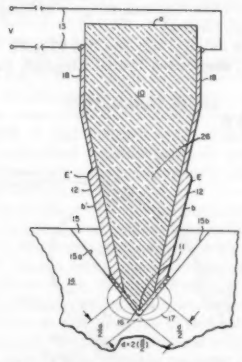
SURGICAL CUTTING INSTRUMENT

Andrew Herczog, Hammondsport, and James A. Murphy, Painted Post, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Nov. 16, 1978, Ser. No. 961,189

Int. Cl.³ A61B *17/39*

U.S. Cl. 128—303.14 **6 Claims**



1. A surgical instrument adapted to be coupled to a source of electrical power for cauterizing tissue which is moist and electrically conductive due to the presence of physiological fluid and for simultaneous hemostasis thereof, the instrument comprising:

a blade, a cutting edge formed integrally with said blade along an edge thereof for incising tissue, and at least one pair of electrically-conductive electrodes adapted to be electrically coupled to the source of power, said electrodes disposed in the vicinity of said cutting edge having conductive surfaces to contact tissue which are disposed in spaced relationship on the blade adjacent to and oriented substantially parallel with each other and the cutting edge, wherein a plurality of parallel current paths are oriented substantially transversely with the cutting edge to conduct electrical power from one electrode to the other for directly heating the tissue in response to the electrical power applied to said electrically conductive electrodes and

connection means on said surgical instrument providing electrical connections to said electrodes for supplying the electrical power thereto, the spacing of the electrodes being from about 0.1 to 1.0 mm one from another for carrying average electrical power of a magnitude of from about 5 to 50 watts without producing an electrical arc from one electrode to another.

4,248,232

METHOD OF DISSOLVING THE BOND BETWEEN INTERCONNECTED COMPONENTS

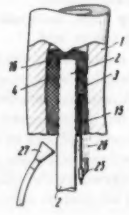
Eckart Engelbrecht, Andreasstr. 33, Hamburg, and Elmar Nieder, Hinterdeich 117, Jork, both of Fed. Rep. of Germany

Filed Sep. 12, 1978, Ser. No. 941,661

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1978, 2741107

Int. Cl.³ A61B *17/32*

U.S. Cl. 128—305 **4 Claims**



1. In a method of dissolving the bond between an artificial prosthesis component and a bone of a patient wherein the component projects into a bone cavity and is embedded into a plastic bone cement bonded to the bone and to the component such that a space is maintained between the component and inner wall faces of the bone; the improvement comprising the following steps:

(a) vibrating a tool in the ultrasonic range;

(b) contacting the plastic bone cement with the vibrating tool for at least locally softening the plastic bone cement;

(c) introducing the vibrating tool into said plastic bone cement in said space whereby a path is cut by the vibrating tool in the plastic bone cement;

(d) repeating the contacting and introducing steps for providing a plurality of paths;

(e) removing plastic bone cement portions from between said paths for weakening the bond; and

(f) subsequent to step (e), removing said component from said cavity.

4,248,233

FORCEPS

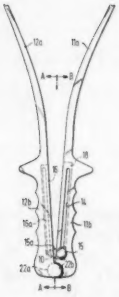
Dieter von Zeppelin, Goethestrasse 30, 723 Schramberg 1, and Wolfgang Sipli, Kapuzinerstrasse 36, 86 Bamberg 3, both of Fed. Rep. of Germany

Division of Ser. No. 852,334, Nov. 17, 1977, Pat. No. 4,151,846, which is a continuation of Ser. No. 631,820, Nov. 14, 1975, abandoned. This application Apr. 20, 1979, Ser. No. 31,736

Claims priority, application Fed. Rep. of Germany, Nov. 19, 1974, 2454762; Dec. 18, 1974, 2459829; Mar. 1, 1975, 2509009

Int. Cl.³ A61B *17/44*

U.S. Cl. 128—323 **2 Claims**



1. Obstetrical forceps comprising:

two non-crossing tong parts, each said part having a baby head engaging tong spoon, and

a tong leg providing a handle disposed to be gripped by a user's hand; said handles being mutually engageable to define the minimum distance between said tong spoons;

manually engageable and disengageable hinge means operable to hingedly connect said legs of said two parts, comprising a first member carried by one of said tong legs, and a second member carried by the other of said tong legs, said members being adapted to telescopically engage one another,

said hinge means being located at the ends of said tong legs remote from said tong spoons; and

bracing means received in a mounting groove in one of said leg handles for longitudinal movement with respect to said tong leg handle, said bracing means including a portion disposed between said tong parts to be engageable with a surface of the other tong leg handle and a portion exposed for engagement by a user's hand gripping said leg handles, said bracing means thereby operable to adjustably fix a minimum distance between the tong legs, and thus the tong spoons of said two tong parts, said bracing means being moveable generally away from said hinge means to effect relative closure of said tong spoons;

the other of said legs defining an interlocking groove, said bracing means including retaining means for engaging said interlocking groove,

whereby said tong parts facilitate manual hinge means engagement and tong spoon separation adjustment without the user removing his hands from said handles after insertion of the tong spoons into a body cavity.

4,248,234

CATHETER WITH VARIABLE FLEXURAL MODULUS AND METHOD OF USING SAME

John S. Assenza, Basking Ridge, and Joseph J. Thomas, Bridgewater, both of N.J., assignors to Critikon, Inc., Tampa, Fla.

Filed Mar. 8, 1979, Ser. No. 18,493

Int. Cl.³ A61M *25/00*

U.S. Cl. 128—348 **3 Claims**

1. A catheter having a variable flexural modulus for insertion into a human body comprising:

a length of catheter tubing having a normally relatively low flexural modulus, said tubing having a first lumen for providing a free path for the flow of fluid through said tubing;

a second tubing located within said catheter tubing and defining a second lumen having a closed distal end and a proximal end adapted to be connected to a pressure source;

said second tubing lying in said path for flow of fluid with its distal end facing the insertion end of said catheter tubing, and, in its normal condition, said second tubing providing a clearance between itself and the inside wall of said catheter tubing so that fluid is free to pass through said lumen, said second tubing being expandable under pressure to provide a snug fit against the inside wall of said catheter tubing when pressurized to thereby increase the flexural modulus of said catheter tubing;

said second tubing being removable from said catheter tubing;

whereby after said catheter is positioned in said body the second tubing may be removed to completely free the fluid path in said lumen.

4,248,235

VALVE ASSEMBLIES

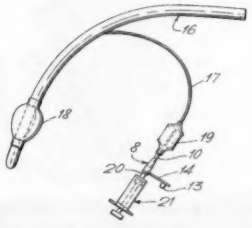
Joseph P. Taylor, Hythe, England, assignor to Smiths Industries Limited, London, England

Filed Jul. 5, 1978, Ser. No. 922,249

Claims priority, application United Kingdom, Jul. 14, 1977, 29712/77

Int. Cl.³ A61M *25/00*

U.S. Cl. 128—349 R **7 Claims**



1. A valve assembly comprising a resilient housing and a unitary body located within said housing, said body being of generally tubular shape and having one end open and the other end closed by a generally dish-shaped sealing portion, said sealing portion having a circumferencial lip for engagement with said housing so as thereby to prevent fluid flow through said housing, a through aperture in said body, and means resil-

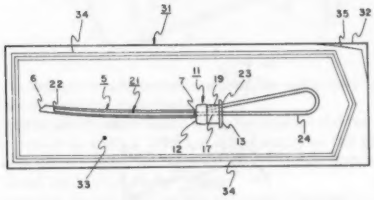
iently supported on said body and extending over said aperture, said means including a part which extends inwardly into the interior of said tubular body to thereby be adapted for movement outwardly by an actuating member inserted into said one open end of said body, whereby outward movement of said portion causes outward distortion of said housing away from said lip to thereby permit flow through said housing between said lip and said aperture and via said aperture into the interior of said tubular body.

4,248,236

PACKAGED MEDICAL APPLIANCE

Gerald S. Linder, 16693 Charmel La., Pacific Palisades, Calif. 90272

Filed Dec. 26, 1978, Ser. No. 973,145
Int. Cl.[3] A61M *25/00*
U.S. Cl. 128—349 B **9 Claims**



1. A packaged medical appliance comprising in combination:

(a) an elongated, cylindrical catheter consisting of a flexible hollow tube having open distal and proximal ends;

(b) a hollow connector having a cylindrical spout section of small diameter at one end and a cyindrical open end section of larger diameter at the other end, the cylindrical spout section being inserted into the open proximal end of said catheter;

(c) a long catheter guide consisting of a wire of malleable material having rounded distal and proximal ends, a portion of the length of said catheter guide being situated within said hollow, cylindrical catheter, with the distal end of said catheter guide being positioned near the open distal end of said catheter;

(d) a stop means affixed to said catheter guide, said stop means being supported by the cylindrical open end section of said hollow connector, said stop means being positioned along said guide to predetermine the length of the portion of said guide situated within said catheter at less than the length of said catheter and inserted connector to prevent the distal end of said guide from extending beyond the open distal end of said catheter, the portion of the length of said catheter guide situated outside said hollow cylindrical catheter and said hollow connector being formed into a shape for use as a handle, said handle having a smooth, rounded end; and

(e) a flexible envelope of tough gas-permeable material completely enclosing and sealing said catheter, connector, guide and stop means; said catheter with connector, guide and stop means being gas-sterilizable within said gas-permeable envelope, the flexible distal end of said hollow catheter providing protection against rupture of said flexible envelope by the distal end of said catheter guide, said catheter guide providing structural support and protection for said hollow, flexible catheter during shipment, and said catheter and the portion of the length of said guide situated within said catheter being manually configurable into a desired shape for intubation while enclosed within said flexible envelope, the configuration being achieved without rupture of said envelope and without loss of sterility of said catheter, connector, guide and stop means, said flexible envelope having a peelable flap portion located at one end thereof adjacent the smooth, rounded end of said handle, the smooth, rounded end of said handle minimizing the risk of rupture of said flexible envelope during handling and shipment, said catheter with inserted connector, guide and stop means being ready for immediate use upon removal from said envelope by peeling away said flap thereby rupturing the seal.

4,248,237

CARDIAC PACEMAKERS

John Kenny, Sawbridgeworth, England, assignor to Needle Industries Limited, Studley, England

Filed Mar. 9, 1978, Ser. No. 884,966
Int. Cl.[3] A61N *1/36*
U.S. Cl. 128—419 P **12 Claims**

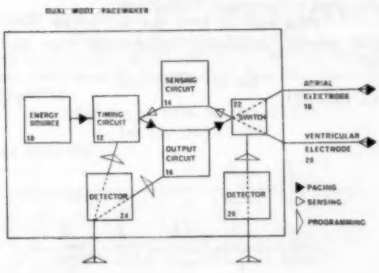
1. A case for implantation in a body, which case comprises a rigid supporting substrate of a plastics material, which substrate defines a chamber, and a skin of platinum fitted over said substrate and forming the outermost surface of the case, the skin being formed of at least two pieces of platinum, the thickness of which pieces is 0.1875 mm to 0.5 mm, the pieces of platinum being welded together along mating edges to form a hermetically-closed case surrounding and being supported by said substrate.

4,248,238

HEART STIMULATING APPARATUS

Simon P. Joseph, 3 Lowther Rd., Barnes, London, S.W.13, England

Filed Mar. 26, 1979, Ser. No. 24,013
Int. Cl.[3] A61N *1/36*
U.S. Cl. 128—419 PG **8 Claims**



1. In heart-pacing apparatus

a first electrode implanted in a heart,

a second electrode implanted in a heart,

switching means operative to select either the first or the second electrode for controlling the apparatus,

means electrically connecting the switching means and the first and second electrodes,

means for supplying electrical pulses to the electrodes through the switching means and the electrical connection means,

means for sensing the potential at either the first or the second electrode through the electrical connection means and the switching means, and

further electrical connection means between thesensing means, the pulse supply means and the electrodes by which signals from the sensing means are operative to change over heart stimulation from one electrode to the other.

4,248,239

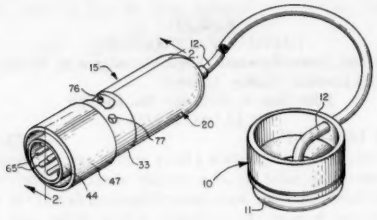
MEDICAL SENSOR ASSEMBLY WITH BATTERY

Robert H. Ricciardelli, Waukesha, Wis., assignor to Biochem International Inc., Wauwatosa, Wis.

Filed May 29, 1979, Ser. No. 42,914

Int. Cl.³ A61B 5/05

U.S. Cl. 128—635 **3 Claims**



1. A medical sensor assembly for monitoring a patient's system by sensing skin surface conditions, comprising:

a. a sensing head for securing to a patient's skin surface having an anode and a cathode therein,

b. a shielded cable extending from said head for releasably connecting said sensor assembly to a monitor system component, and

c. battery means in one of said head and said cable for maintaining a voltage bias across said anode and cathode whether said cable is connected to or disconnected from said monitor component.

4,248,240

APPARATUS FOR DETECTING THE ACTIVITY OF THE RESPIRATORY ORGANS AND THE HEART OF A LIVING BEING

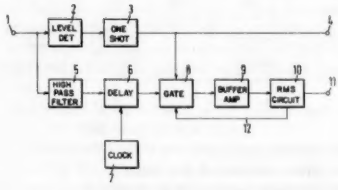
Leo A. van Eykern, Zuidhorn, Netherlands, assignor to Rijksuniversiteit te Groningen, Netherlands

Filed Mar. 20, 1979, Ser. No. 22,189

Claims priority, application Netherlands, Mar. 20, 1978, 7803017

Int. Cl.³ A61B 5/04

U.S. Cl. 128—671 **7 Claims**



1. Apparatus for detecting the activity of the respiratory organs and heart of a living being using passive measuring electrodes applied to the surface of the skin for detecting a composite EMG signal including respiratory electromyogram signals intermixed with QRS-complex signals, said apparatus comprising:

means for receiving said composite signal;

first signal path means connected to said means for receiving or providing a series of gating pulses corresponding to respective QRS-complex signals in the receiving composite signal;

second signal path means connected to said means for receiving;

gating means in said second signal path means and responsive to said gating pulses for blocking passage of said composite signal along said second signal path means during the period of each gating pulse; and

output means disposed beyond said gating means in said second path means for providing a first output signal representative of respiratory organ activity.

4,248,241

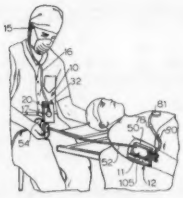
PATIENT MONITORING APPARATUS

Ernest J. Tacchi, 500 Duluth St., Durham, N.C. 27705

Continuation-in-part of Ser. No. 893,428, Apr. 4, 1978, abandoned. This application Aug. 17, 1979, Ser. No. 67,389

Int. Cl.³ A61B 5/00

U.S. Cl. 128—671 **17 Claims**



14. A portable patient monitoring apparatus adapted to permit, under control of the operator, selective detection and radio transmission of either a source of blood pressure related sounds or a source of other biologic sounds, comprising:

(a) a receiver unit having a housing adapted for support on an operator's belt, pocket, or the like, and enclosing a tunable receiving circuit, power supply and a speaker, an antenna associated with said receiving circuit, and an earpiece and tubing between said speaker and earpiece for transmission of audible sounds from said speaker to said earpiece in response to transmitted signals received by said antenna;

(b) a blood pressure cuff assembly mountable on a limb of the patient and including a blood pressure cuff, a first associated acoustic pickup piece for receiving and transmitting through associated tubing audible blood pressure related sounds developed when said cuff is inflated and inflating means for said cuff;

(c) a second acoustic pickup piece suitable for positioning on said patient for receiving and transmitting through associated tubing other audible related body sounds; and

(d) a transmitter unit having a housing adapted for support proximate the patient being monitored and enclosing a tunable radio transmitter circuit having a power supply and microphone means for receiving sounds to be transmitted, an antenna associated with said transmitting circuit and pressure dependent operator means enclosed within said transmitter housing, said acoustic pickup pieces being sound connected with said microphone means by means of tubes which extend between said pickup pieces and said microphone means, said blood pressure cuff and said inflating means being interconnected by means of tubing which also passes at least partially through said housing and connects to said operator means, said operator means being capable of allowing the transfer of audible sounds from said first pickup piece through said microphone means to said transmitting circuit upon inflation of said pressure cuff and being capable of blocking such transmission upon deflation of said blood pressure cuff.

4,248,242

OCCLUSIVE SPHYGMOMANOMETER FOR THE MEASURING OF THE ARTERIAL BLOOD PRESSURE

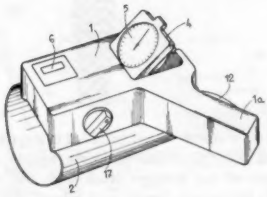
Ulf, S. H. Tamm, 122, chemin de la Montagne, 1224 Chene-Bougeries, Geneva, Switzerland

Filed Jan. 19, 1979, Ser. No. 4,725

Claims priority, application Switzerland, Jan. 20, 1978, 436788/78

Int. Cl.³ A61B *5/02*

U.S. Cl. 128—678 **6 Claims**



1. An occlusive sphygmomanometer for measuring an arterial blood pressure, comprising:

an elastic air chamber which is engageable around the arm of a patient to exert a pressure on an artery of the patient's arm when inflated and thereby momentarily interrupt the blood circulation in the artery;

a pumping device connectable to the air chamber to inflate the air chamber by introducing air thereinto;

a manometer connected to the air chamber and indicating the air pressure in the chamber;

sensor means fixed on the air chamber for sensing the Korotkoff noises produced in an artery during the systolic phase of a heart beat and having an output producing a signal in response thereto;

a display device coupled to the sensor means to display the presence of Korotkoff noises sensed by the sensor means;

an electronic circuit coupling the sensor means output signal to the display device to amplify the signal and control the display device; and

a control device comprising a rotary manifold valve having a manually operable rotary element, and switching means for switching on and off power to the electronic circuit integral with the rotary element, the rotary manifold valve connecting the air pump to the air chamber through the rotary element when the element is in a first rotary position, the rotary manifold valve connecting the air chamber through the rotary element to the exterior of the valve when the element is in a second rotary position to provide evacuation of air from the chamber at a slow rate of speed and the rotary manifold valve connecting the air chamber to the exterior of the valve through the rotary element when the element is in a third rotary position to provide evacuation of air from the chamber at a fast rate of speed greater than the slow rate of speed, and the switching means respectively switching on and off power to the electronic circuit when the element is rotated to and from the second position.

4,248,243

SUSPENSION ARM FOR E.K.G. SUCTION ELECTRODES

Eduard Niess, and Heiner Hoffmann, both of Herrlingen, Fed. Rep. of Germany, assignors to Fa. Ingeborg Niess Elektromedizinische Apparate, Blaustein-Herrlingen, Fed. Rep. of Germany

Filed Aug. 23, 1979, Ser. No. 69,161

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1978, 2837279

Int. Cl.³ A61N *1/04*

U.S. Cl. 128—696 **10 Claims**

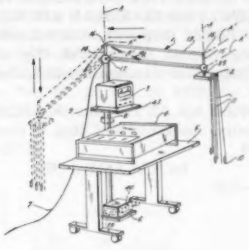
1. In combination with an electromedical apparatus having electrical circuitry and a compressed-air source connectable to a plurality of suction electrodes, an electrode-connection assembly comprising:

a support defining an upright pivot axis and connected to said apparatus;

a head defining another upright axis and suspending said suction electrodes;

respective horizontally spaced head and support short links extending along the respective axes on said head and support;

a first long link extending generally horizontally between said short links;



a second long link extending generally horizontally between said short links and generally parallel to and offset vertically from said first link, said second link forming a pair of passages one of which is a compressed-gas passage extending between said source and said head;

an electrical wire extending in the other of said passages between said circuitry and said electrodes; and

pivots interconnecting said links as a parallelogrammatic linkage for vertical and horizontal movement of said head with said electrodes relative to said support.

4,248,244

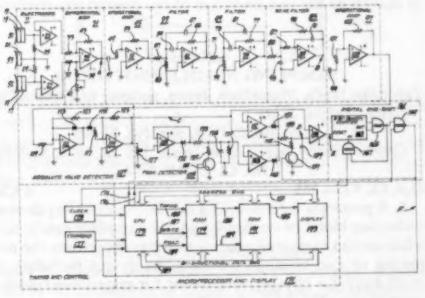
METHOD FOR MEASURING HEART BEAT RATE AND CIRCUIT MEANS FOR SAME

Richard D. Charnitski, 25601 Adriana St., Mission Viejo, Calif. 92691, and Curtis W. Morgan, P.O. Box 243, Sunset Beach, Calif. 90742

Filed Apr. 6, 1979, Ser. No. 27,933

Int. Cl.³ A61B *5/04*

U.S. Cl. 128—706 **15 Claims**



1. A heart rate indicator comprising:

electrode means for producing an electrical impulse corresponding to each beat of the heart of a living subject;

circuit means connected to said electrode means for producing a burst of alternating electrical signal in response to said electrical impulse;

detector means connected to said circuit means for detecting the point in time the peak amplitude occurs of the enve-

lope of each burst of alternating signal and for producing an electrical pulse in response thereto;

computing means connected to said detector means for measuring the time between each electrical pulse produced by said detector means and converting the time measurement into a number representing heartbeat rate; and

indicating means connected to said computing means for displaying said number representing heartbeat rate.

4,248,245

METHOD AND DEVICE FOR DETERMINING AND SEPARATING THE ALVEOLAR AIR PROPORTION FROM THE BREATHING AIR

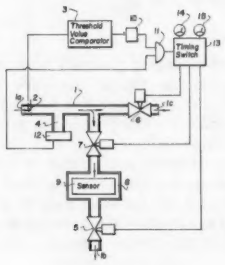
Hans-Friedhelm Kempin, Lübeck, Fed. Rep. of Germany, assignor to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 12, 1979, Ser. No. 29,348

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1978, 2816499

Int. Cl.³ A61B *5/00*

U.S. Cl. 128—719 **5 Claims**



1. A method of determining and separating the alveolar air of a person's exhaled air from the remainder of the exhaled air and thereafter measuring a concentration of a desired gas component of the separated alveolar air, comprising, conveying the exhaled air at a minimum velocity through a conduit, continuously measuring a temperature of the conveyed air as the temperature changes, and when the changes in the temperature which is measured drops below a predetermined threshold value for such changes, directing the air into a measuring chamber, and using a sensor device in the measuring chamber to determine the concentration of the desired gas component.

4,248,246

SAMPLING NEEDLE PROTECTOR

Tatsuhiko Ikeda, Musashino, Japan, assignor to Terumo Corporation, Tokyo, Japan

Filed Jul. 5, 1979, Ser. No. 54,905

Claims priority, application Japan, Jul. 28, 1978, 53/92385

Int. Cl.³ A61B *5/14*

U.S. Cl. 128—765 **6 Claims**

1. A protector for a sampling needle of a sampling device for collecting blood or coeliac liquid, the sampling needle having a hub and an elongated needle extending therefrom, the needle having an end opening; the sampling device including a syringe having a plunger, and means for engagement with said sampling needle; the protector comprising:

a cylindrical member having a hydrophilic inner wall, at least one end of said cylindrical member having an opening for insertion of a sampling needle therein, the inner wall of said opening having engagement means for engaging the hub of a sampling needle inserted into the opening; and

a seal material filled in the interior of said cylindrical member and into which said sampling needle is insertable for embedding at least the end opening of the sampling needle therein, the seal material being formed of the substance which is pierceable by a 20-gauge sampling needle to a depth of 10 mm with a smaller load than 2 Kg, and which

prevents a sample liquid received in a syringe from leaking out of the tip of the sampling needle even when the plunger of the syringe fitted with the sampling needle pushes the sample liquid with a load of 1 Kg.

4,248,247

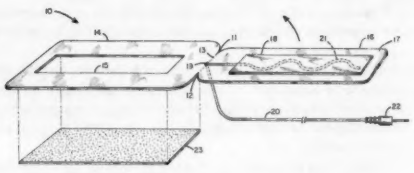
LOW COST POST-OPERATIVE ELECTRODE

Lyle A. Ware, Bloomington, and Marc D. Noerenberg, Chaska, both of Minn., assignors to Med General, Inc., Minneapolis, Minn.

Filed Jun. 28, 1979, Ser. No. 52,930

Int. Cl.³ A61B *5/04*

U.S. Cl. 128—798 **6 Claims**



1. A conformable electrode for attachment to the skin of a patient comprising:

(a) a generally rectangular sheet of flexible plastic material folded along a median line extending transverse to the longitudinal axis of said sheet so as to effectively divide said sheet into two halves;

(b) an aperture of a predetermined size centrally disposed in one of said halves;

(c) a flexible conductive sheet member of a predetermined dimension adhesively attached to the other of said halves and disposed within said aperture;

(d) means for making an electrical connection to said flexible conductive sheet member; and

(e) a continuous conductive adhesive material affixed to said one of said halves and contacting the surface of said flexible conductive sheet member which is exposed through said aperture.

4,248,248

INTERRUPTED INFEED FLIGHT MEANS FOR COMBINE ROTOR

Cyriel R. J. De Busscher, Sijsele, and Francois Van Herpe, Vlierzele, both of Belgium, assignors to Sperry Rand Corporation, New Holland, Pa.

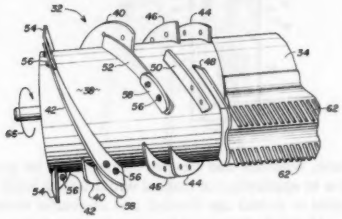
Filed Apr. 6, 1979, Ser. No. 27,590

Int. Cl.³ A01F *12/18*

U.S. Cl. 130—27 HA **8 Claims**

1. A rotor for an axial flow type mobile combine having threshing means extending longitudinally therealong rearwardly from the forward end thereof and including rasp bars

and the like, in combination with flight means on the forward infeed end of said rotor operable to engage harvested agricultural material delivered thereto from the forward end of a combine, said flight means comprising interrupted flight segments arranged in a substantially spiral overall pattern and connected to a base member coaxial with said rotor, said interrupted segments being in axially offset and staggered relationship to each other by being longitudinally and circumferentially spaced along the surface of said base member from the



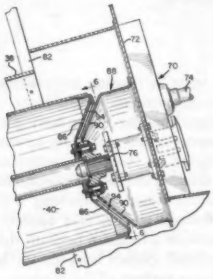
forward end thereof toward the rearward end of said rotor to provide a substantial multiplicity of leading edges to attack the material aggressively, said rotor being operable for unidirectional rotation and the leading ends of said segments in the direction of rotation of said rotor being adapted to aggressively engage said agricultural material in a ripping and tearing manner to disintegrate any knotted masses thereof and thereby feed the same in a relatively even manner longitudinally rearward for engagement by the threshing means on said rotor.

4,248,249

COMBINE ROTOR DRIVE ANTI-TRASH SYSTEM

Neil C. Dunn, Moline; Robert L. Francis, East Moline, and Harold E. Smith, Colona, all of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Jul. 2, 1979, Ser. No. 54,353
Int. Cl.[3] A01F *7/06, 12/54, 12/18*
U.S. Cl. 130—27 T **5 Claims**



1. In an axial flow combine, the combination comprising:

a rotor casing having an open end for reception of crop material and an opposite discharge end having an end wall;

a generally cylindrical rotor journalled for rotation within said casing for threshing and separating crop material as the rotor is driven;

rotor drive means including a gear case proximate to said end wall and a drive shaft interconnected between the gear case and said rotor coaxially therewith for driving said rotor;

a cover for said gear case interposed between said gear case and said rotor and disposed proximate to said end wall and including a smooth annular surface disposed about said drive shaft;

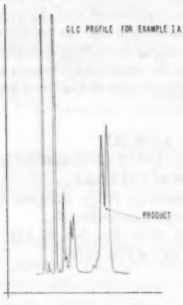
said rotor having an annular end surface of smooth configuration disposed in spaced relation to said surface of said cover to define therebetween an annular space the smooth surfaces of which inhibit collection of crop material.

4,248,250

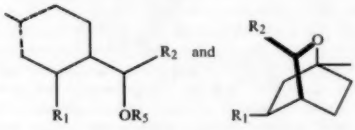
USE OF CYCLIC CHEMICAL COMPOUNDS FOR AUGMENTING OR ENHANCING THE AROMA OR TASTE OF SMOKING TOBACCO AND SMOKING TOBACCO ARTICLE

Mark A. Sprecker, Sea Bright; Frederick L. Schmitt, Holmdel; Manfred H. Vock, Locust; Joaquin F. Vinals, Red Bank, all of N.J., and Jacob Kiwala, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 953,128, Oct. 20, 1978, Pat. No. 4,195,099. This application Jun. 7, 1979, Ser. No. 46,362
Int. Cl.[3] A24B *3/12*
U.S. Cl. 131—17 R **34 Claims**



1. A process for augmenting or enhancing the aroma or taste of a smoking tobacco comprising the step of intimately admixing with smoking tobacco an organoleptic property augmenting or enhancing quantity of a cyclic chemical compound having a structure selected from the group consisting of:



wherein R_1 is selected from the group consisting of hydrogen and methyl; R_2 is C_3–C_5 alkyl or alkenyl; and R_5 is hydrogen or C_1–C_4 acyl and wherein one of the dashed lines is a carbon-carbon single bond and the other of the dashed lines is a carbon-carbon double bond.

4,248,251

TOBACCO COMPOSITION

Herman G. Bryant, Jr., Bahama, and Vello Norman, Raleigh, both of N.C., assignors to Liggett Group Inc., Montvale, N.J.

Continuation-in-part of Ser. No. 721,142, Sep. 7, 1976, abandoned, which is a continuation-in-part of Ser. No. 458,355, Apr. 5, 1974, abandoned. This application Feb. 21, 1979, Ser. No. 13,576
Int. Cl.[3] A24B *15/28, 15/30, 15/42*
U.S. Cl. 131—17 R **3 Claims**

1. A smoking composition comprising tobacco containing about 0.25 to about 0.80 weight percent native nitrate nitrogen and palladium in an amount of from about 0.001 to about 1

weight percent based on the weight of the tobacco wherein said palladium is in the form of finely divided metallic palladium.

4,248,252

CONTINUOUS PROCESS FOR EXPANDING TOBACCO

Andrew T. Lendvay, Richmond, Va., and Billy M. Spann, Oak Ridge, Tenn., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Jun. 2, 1978, Ser. No. 912,029
Int. Cl.[3] A24B *3/18*
U.S. Cl. 131—140 P **6 Claims**

1. The continuous process of expanding tobacco comprising the steps of:

a. contacting tobacco with concentrated ammonium hydroxide in an amount sufficient to introduce at least one percent by weight of ammonia;

b. allowing the tobacco to remain in contact with the ammonium hydroxide for at least one minute;

c. combining the ammonium hydroxide-treated tobacco with sufficient solid carbon dioxide in comminuted form to counteract the heat of reaction of the carbon dioxide, ammonia and tobacco moisture and to release enough carbon dioxide for absorption into the tobacco of between 2 and 8 percent by weight of carbon dioxide;

d. thereafter expanding the tobacco by means of heat; and

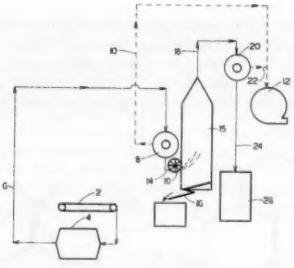
e. equilibrating the tobacco after it has been expanded.

4,248,253

METHOD FOR SEPARATING VEINS FROM LAMINA OF TOBACCO LEAF

Philip H. Cogbill, II, Pineville, N.C., assignor to Brown & Williamson Tobacco Corp., Louisville, Ky.

Filed Jun. 11, 1979, Ser. No. 47,424
Int. Cl.[3] A24B *5/10*
U.S. Cl. 131—146 **10 Claims**



1. A process for removing the veins from bulk strip tobacco, including lamina and veins, comprising the steps of: milling said bulk strip tobacco through an attrition mill including a pair of spaced parallel discs wherein one of the discs is rotatable and the other is stationary; and, separating the veins from the lamina.

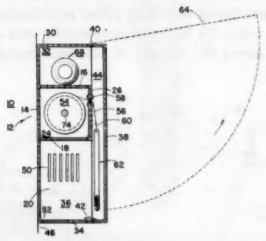
4,248,254

RETAINER FOR TOILET ARTICLES

Ronald L. Trimble, 210 E. Warren St., Williamsport, Ind. 47993

Filed Aug. 30, 1978, Ser. No. 938,081
Int. Cl.[3] A45D *44/18*
U.S. Cl. 132—84 D **11 Claims**

1. In a retainer for toilet articles or the like including a housing having front, back and side walls mutually defining a cavity, said back housing wall being adapted for mounting on a vertical building wall, the improvement wherein said front wall has at least one aperture therein communicating with said cavity, and comprising at least one reel device mounted in said cavity and having an elongated flexible element wound thereon, said flexible element extending outwardly through said front wall aperture and having means thereof for securing a toilet article thereto, said reel being adapted to pay-out said flexible element and including power drive means for reeling-



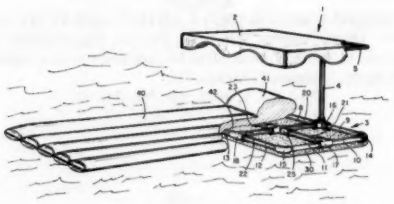
in the same, whereby said flexible element may be payed-out responsive to application of manual withdrawing force on said toilet article to permit use thereof, and thereafter reeled-in to suspend said article from said housing front wall in a storage position.

4,248,255

FLOATING CANOPY

Charlotte A. Arrowsmith, 1611 Exley Ave., Las Vegas, Nev. 89104

Filed Oct. 11, 1978, Ser. No. 950,427
Int. Cl.[3] A45F *1/14*; C04F *10/00*
U.S. Cl. 135—5 R **8 Claims**



1. In combination, a floating body-supporting mattress, a floating canopy in frictional engagement with said mattress comprising a plastic tubular frame having a flat base portion, upright rigid support means extending upwardly from a central portion of an edge of the base, and canopy support means, and flotation means secured to the base portion for imparting buoyancy, said flotation means comprising a thin slab of rigid, non-absorbent foamed plastic, said canopy having sufficient buoyancy to maintain a location beneath the floating mattress in water by frictional contact between the base portion of the canopy and a lower surface of the mattress.

4,248,256

PLATFORM CRUTCH ATTACHMENT FOR AN INVALID WALKER

Morton I. Thomas, Nyack, N.Y., assignor to Temco Products, Inc., Passaic, N.J.

Filed Sep. 4, 1979, Ser. No. 72,012
Int. Cl.[3] A61H *3/00, 3/02*
U.S. Cl. 135—67 **13 Claims**

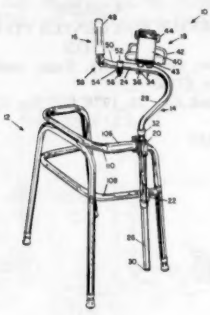
1. A crutch attachment apparatus for an invalid walker comprising:

attachment means for connecting said apparatus to said walker;

a shaft connected to said attachment means, said shaft hav-

ing a top section, a bottom section, and an intermediate connecting section connecting said top and said bottom sections and,

a cuff connected to said shaft for supporting a human forearm;



a handle including a grip section attached to the top end of said shaft; and,

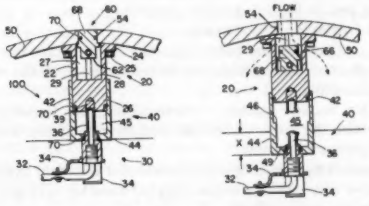
a handle tilt and locking means for permitting said grip section to be rotated forwardly and backwardly and locking same in a fixed position.

4,248,257

FLOOD VALVE

Thomas K. C. Hardesty, Ednor, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 26, 1979, Ser. No. 24,147
Int. Cl.[3] F16K *17/40*
U.S. Cl. 137—68 A **33 Claims**



1. A pyrotechnically actuated valve fitted within an enclosed wall means, said wall means having at least one opening therethrough communicating the interior of said wall means with high pressure ambient fluid, comprising:

a base member attached to said wall means at said at least one opening,

means for translating along said base member, said translating means disposed concentrically about said base member and comprising means for blocking each of said at least one opening such that movement of said translating means away from said at least one opening causes said blocking means to unblock said at least one opening,

means defining a pressure cavity between said base member and said translating means,

means for separably fastening said base member and said translating means, said fastening means being disposed within said cavity and being fixed at one end to said base member and at its other end to said translating means, said fastening means being fusible and including a pyrotechnic mixture capable of producing a high pressure motive fluid upon fusion, and

means for initiating fusion of said fastening means,

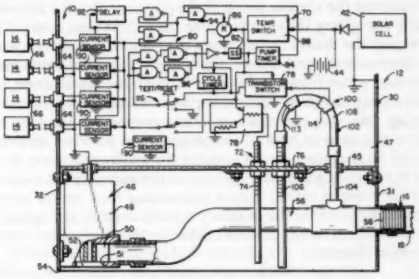
whereby prior to valve actuation said blocking means is positioned within said opening and upon valve actuation, said fastening means fuses and separates allowing release of high pressure motive fluid within said cavity thereby forcing said translating means to move away from said base member and removing said blocking means from within said opening.

4,248,258

FLAT ROOF AUXILIARY DRAIN SYSTEM

Gerald J. Devitt, 131 Pond St., and Richard A. Ritter, 9 Green Meadow Dr., both of Billerica, Mass. 01821

Filed Jun. 11, 1979, Ser. No. 47,360
Int. Cl.[3] F04F *10/00*
U.S. Cl. 137—124 **9 Claims**



2. A flat roof auxiliary drain system for draining standing water from a generally flat roof, comprising a master module having a housing with a lower support base for supporting the master module on a generally flat roof, a power source, a water drain with a drain conduit for syphoning standing water from the roof, an electric pump mounted within the housing having an outlet conduit connected to the drain conduit for pumping standing water through the drain conduit to charge the drain conduit for syphoning standing water from the roof, pump control means, including control circuit means, for selectively connecting the electric pump to the power source for automatically energizing the electric pump for a short time interval for charging the drain conduit when the standing water reaches a predetermined level above the support base for syphoning standing water from the flat roof through the water drain, at least one satellite module having a housing with a lower support base for supporting the satellite module on a flat roof spaced from the master module, a satellite electric pump mounted within the satellite module housing with an inlet conduit with an inlet opening adjacent to but above the support base of the satellite module housing and a pump outlet conduit adapted to be connected for syphoning water from the pump inlet opening and through the pump and pump inlet and outlet conduits, and a satellite electric line for each satellite module for connecting the electric pump of the satellite module to the master module, and wherein the control circuit means is operable for connecting each satellite electric line to the power source to energize the satellite pump in conjunction with the energization of the master module pump.

5. A flat roof auxiliary drain system for draining standing water from a generally flat roof, comprising a master module having a housing with a lower support base for supporting the master module on a generally flat roof, a power source, a water drain with a drain conduit for syphoning standing water from the roof, an electric pump mounted within the housing having an outlet conduit connected to the drain conduit for pumping standing water through the drain conduit to charge the drain conduit for syphoning standing water from the roof, and pump control means, including control circuit means, for selectively

connecting the electric pump to the power source for automatically energizing the electric pump for a short time interval for charging the drain conduit when the standing water reaches a predetermined level above the support base for syphoning standing water from the flat roof through the water drain, the control circuit means comprising drain cycle timing and interlock means for establishing a predetermined minimum cycle time interval between pump energization phases.

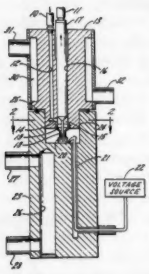
8. A flat roof auxiliary drain system for draining standing water from a generally flat roof, comprising a master module having a housing with a lower support base for supporting the master module on a generally flat roof, a power source, a water drain with a drain conduit for syphoning standing water from the roof, an electric pump mounted within the housing having an outlet conduit connected to the drain conduit for pumping standing water through the drain conduit to charge the drain conduit for syphoning standing water from the roof, and pump control means, including control circuit means, for selectively connecting the electric pump to the power source for automatically energizing the electric pump for a short time interval for charging the drain conduit when the standing water reaches a predetermined level above the support base for syphoning standing water from the flat roof through the water drain, the pump control means comprising an auxiliary syphon conduit having one free end with an inlet opening adjacent to but above the support base of the housing and its other end connected to the pump outlet conduit for syphoning water from the auxiliary syphon inlet opening to the pump outlet conduit, and the control circuit means comprising flow sensor means for sensing water in the auxiliary syphon conduit and operable for preventing reenergization of the electric pump when water is sensed therein.

4,248,259

FLUID FLOW CONTROL DEVICE

Niilo H. Kaartinen, and Pentti J. Juhala, both of Kuusisto, Finland, assignors to Packard Instrument Company, Inc., Downers Grove, Ill.

Filed May 16, 1977, Ser. No. 797,305
Int. Cl.³ F16K 49/00
U.S. Cl. 137—334 **2 Claims**



2. A fluid flow control device comprising the combination of

a thermally conductive conduit section having both interior and exterior heat exchange surfaces, said interior heat exchange surface being adapted to contact fluid traversing said conduit section,

means for pre-cooling liquid approaching said conduit section,

a heat sink coupled to said exterior heat exchange surface and maintained at a temperature substantially below the freezing point of a liquid flowing thereover for freezing said liquid adjacent said interior heat exchange surface and thereby at least partially restricting the flow of fluids thereover, and

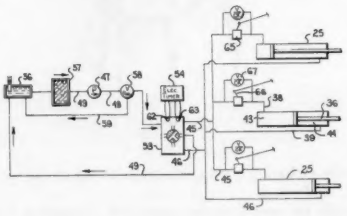
controllable heating means for heating the liquid adjacent said interior heat exchange surface to a temperature above the freezing point of said liquid to melt at least a portion of any frozen liquid adjacent thereto and thereby permit fluid flow thereover.

4,248,260

CONTROL DEVICE FOR CENTER PIVOT IRRIGATION UNITS

Carl E. Addison, Gray County, Kans., and Rocky J. Comes, Offerle, Kans. 67563

Filed Aug. 21, 1978, Ser. No. 935,620
Int. Cl.³ B05B 3/00
U.S. Cl. 137—899 **10 Claims**



1. In a hydraulically driven center pivot irrigation system having a plurality of water pipe support vehicles each with a selectively double acting hydraulic cylinder mounted thereon for moving the vehicles over the ground, said vehicles being substantially radially aligned outwardly from a pivotal water source whereby the rates of speed with which said vehicles move increases proportionally with the respective distances said vehicles are spaced from said water source, and including means aligning the vehicles, a pump having a pressure line and a return line, a power manifold interconnecting a power side of each of the cylinders, and a retract manifold interconnecting a retract side of each of the cylinders, the improvement of a control device for said system comprising:

(a) a hydraulic valve having:

(1) a first position communicating the pressure line with the power manifold, and the return line with the retract manifold; and

(2) a second position communicating the pressure line with the retract manifold, and the return line with the power manifold;

(b) switching means operably connected with said hydraulic valve and regularly sequencing the same between said first and second positions;

(c) a plurality of shut-off valves connected between one side of an associated one of said hydraulic cylinders and its respective power manifold, each of said shut-off valves including a controller spool connected with and manipulated by said vehicle aligning means and being adapted for maintaining said vehicles in substantial alignment radially outwardly from said pivotal water source by selectively controlling the flow of hydraulic fluid between one side of each of said hydraulic cylinders and its respective power manifold; and

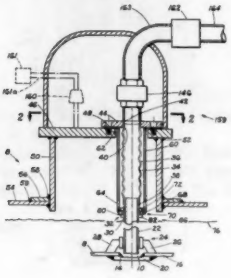
(d) a plurality of check valves connected between the power side of an associated one of said cylinders and the power manifold in a parallel relationship with said shut-off valve; each of said check valves permitting fluid flow from said power manifold to the associated cylinder when said hydraulic valve is in said first position thereby preventing incomplete power side stroking of the cylinder and preventing fluid flow in an opposite direction when said hydraulic valve is in said second position thereby preventing retraction of the cylinder unless the associated shut-off valve is in an open position.

4,248,261

EDUCTION PIPE ASSEMBLY HAVING UPPER FLEXIBLE MEMBER

Edwin S. Carlson, St. Charles, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Aug. 20, 1979, Ser. No. 68,268
Int. Cl.³ F17D *1/00*; B65D *83/14*; F16L *11/12*
U.S. Cl. 137—590 **3 Claims**



1. An eduction pipe assembly comprising: a sump located in the bottom of a railway tank car; said tank car having a dome extending above the car and located above said sump; an eduction pipe located above the sump and extending upwardly toward said dome; support means located in the bottom portion of said tank supporting said eduction pipe laterally within the tank; a flexible member sealingly attached to an upper end portion of the eduction pipe; said flexible member extending upwardly into said dome and being sealingly attached at its upper end to laterally extending support means in said dome; conduit means extending out of the dome also attached to said laterally extending support means and being in fluid communication with said flexible member; said flexible member being made of a material which is resistant to corrosive attack by ladings to be transported in the tank; a non-flexible housing attached to said support means and extending downwardly surrounding said flexible member; said housing including housing stop means which engage eduction pipe stop means located on the eduction pipe; in normal position said housing stop means supporting said eduction pipe and said flexible member within said dome and substantially out of contact with the lading; and when the tank top moves downwardly relative to the bottom after initial movement said eduction pipe being supported by said sump, and said dome and said housing moving downwardly relative to said eduction pipe with said flexible member folding upon itself; and whereby after said downward movement said flexible member returns to its original position within said dome, substantially out of contact with the lading.

4,248,262

CAPPING OF AUTOMATIC TRANSMISSION GOVERNOR CASE

Kazuyoshi Iwanaga, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

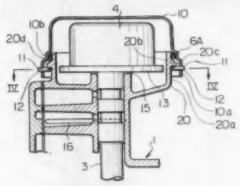
Filed Oct. 17, 1978, Ser. No. 952,172
Claims priority, application Japan, Sep. 7, 1978, 53-122079[U]
Int. Cl.³ F16K *35/00*
U.S. Cl. 137—382 **8 Claims**

1. A combination comprising:

a governor case containing governor valve means for producing a governor pressure in an automotive automatic transmission, said governor case having a cylindrical first wall surrounding said governor valve means, said first wall having an open end providing access to said governor valve means,

a cap member having a cylindrical second wall with a plurality of circumferentially spaced openings therein, said cap member being adapted to cooperate in totally spaced relationship with said governor case to close said open end by axially receiving said first wall within said second wall, with the respective outer and inner diameters of said first and second walls being such that there exists an annular space therebetween,

a resilient annular seal located in said annular space in sealing contact with said first and second walls,



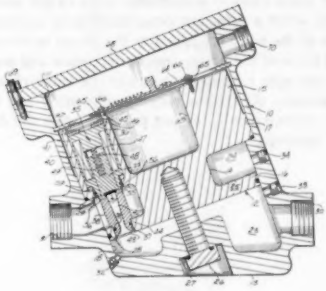
and a removable resilint fastener surrounding at least a portion of said second wall, said fastener having sections which protrude inwardly through the openings in said second wall and across said annular space into contact with said first wall, said first wall including means coacting with said inwardly protruding fastener sections to prevent axial separation of said first and second walls.

4,248,263

DIGITAL FLUID FLOW CONTROL APPARATUS

Addison W. Langill, Jr., Costa Mesa, Calif., and Harry Friedland, Houston, Tex., assignors to Powell Industries, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 689,071, May 24, 1976, abandoned, which is a continuation of Ser. No. 432,153, Jan. 10, 1974, abandoned, which is a continuation-in-part of Ser. No. 169,940, Aug. 9, 1971, Pat. No. 3,726,296, which is a continuation-in-part of Ser. No. 142,681, May 12, 1971, abandoned. This application Mar. 5, 1979, Ser. No. 17,693
Int. Cl.³ F16K *1/00*
U.S. Cl. 137—454.2 **12 Claims**



1. Digital fluid flow control apparatus comprising:

a fluid inlet having an inlet axis that lies approximately in a flow plane;

a fluid outlet having an outlet axis that lies approximately in the flow plane;

a housing having an upstream manifold to which the inlet is connected, a downstream manifold to which the outlet is connected, and a planar partition between the upstream and downstream manifolds, the partition lying at an acute angle to the flow plane; and

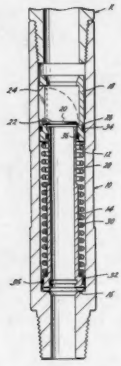
a plurality of individually actuatable bistable valve elements connecting the upstream and downstream manifolds across the partition.

4,248,264

INTERNAL MUD SAVER VALVE

William R. Hadsell, and Tosh Miyagishima, both of Los Angeles, Calif., assignors to Hydril Company, Los Angeles, Calif.

Filed Dec. 31, 1979, Ser. No. 108,368
Int. Cl.³ F16K *25/00*
U.S. Cl. 137—454.2 **9 Claims**



1. A valve assembly for preventing a column of drilling fluid from spilling out of the lower end of a kelly, comprising an elongated body which has an axial opening and is threaded at both ends, a cam rigidly mounted in the bore, a hollow piston in the opening and mounted for axial movement relative to the cam, the piston being shaped so that fluid pressure in the body will exert a downward force on the piston, a valve element pivotally mounted in the piston, the piston inner surface defining a valve seat, the valve element being movable between a lower-closed position when the valve element is above the cam and engages the seat to an upper-open position where the cam engages the valve element and holds it away from the seat, spring means for urging the valve element toward the closed position, means for urging the piston upwardly in the bore so that the valve element is normally in its closed position, and whereby when a sufficient downward force caused by fluid pressure in the body is applied to the piston to overcome the upward force of the urging means the piston will move down causing the cam to engage and raise the valve element to its open position, the piston moving upwardly and the valve element returning to its closed position when the downward force is removed.

4,248,265

ADJUSTABLE RELIEF VALVE

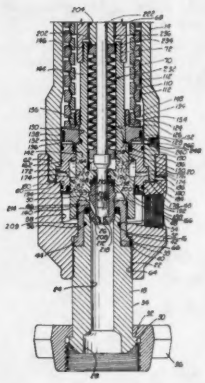
Norman L. Freeman, Jr., Duncan, Okla., assignor to Halliburton Services, Duncan, Okla.

Filed Nov. 13, 1978, Ser. No. 959,985
Int. Cl.³ F16K *17/10*
U.S. Cl. 137—494 **31 Claims**

1. A safety relief valve, comprising:

a main valve means for relieving fluid under pressure;

a pilot valve means, operatively associated with said main valve means, for initially directing said fluid under pressure to said main valve means; and



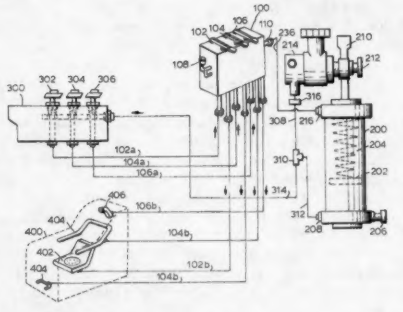
a bypass valve means, responsive to opening of said main valve means, for opening a flow path bypassing said pilot valve means.

4,248,266

LIQUID SOAP INJECTOR FOR A WATER BATH SPRAY SYSTEM

Carl J. Queen, 1041 Bunin La., Riviera Beach, Fla. 33404

Filed Nov. 8, 1978, Ser. No. 958,658
Int. Cl.³ F16K *19/00*
U.S. Cl. 137—564.5 **5 Claims**



1. A system for injecting a first liquid into a second liquid stream such that the first liquid and second liquid are mixed thoroughly together in metered quantities, comprising:

a valve housing, said housing having at least one chamber for receiving a valve body, said housing including an inlet passage for receiving said first liquid, said housing further including an inlet and outlet passage for receiving said second liquid, said second liquid inlet and outlet passages being in fluid communication with said valve body chamber;

a valve body disposed moveably within said valve body housing chamber, said valve body including a land area disposed around its perimeter, the diameter of the land being less than the diameter of said valve body chamber;

first and second sealing means each disposed on an opposite side of said valve body land;

said valve body including an interior passage providing fluid communication between the surface of said land and the base of said valve body;

means connected to the bottom of said valve body chamber and contacting the bottom of said valve body for resiliently holding said valve body in a first position;

said second liquid inlet and outlet means having substantially parallel longitudinal axes, said valve body being moveable to a second position whereby said land area on said valve body is in fluid communication with the first liquid inlet passage in said housing.

4,248,267

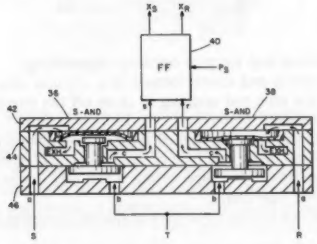
MULTIPLE ELEMENT FLUID LOGIC CONTROLS

Karl A. Brandenberg, Chehalis, Wash., assignor to The Aro Corporation, Bryan, Ohio

Continuation-in-part of Ser. No. 967,293, Dec. 7, 1978, and a continuation-in-part of Ser. No. 967,292, Dec. 7, 1978. This application Aug. 6, 1979, Ser. No. 63,923

Int. Cl.³ F15C *3/04*

U.S. Cl. 137—885 **8 Claims**



6. A fluid operated logic device comprising in combination:

(a) at least one fluid logic flip-flop element having a set input (s), a reset input (r), a fluid supply (P_S), a set output (X_S), and a reset output (X_R), wherein applying a fluid signal to one of the inputs (s) or (r) causes the corresponding output (X_S) or (X_R) to provide or maintain a fluid signal; and

(b) fluid logic means for introducing a signal to the flip-flop inputs including at least one sequential fluid logic element whereby the output signals of the flip-flop element (X_R, X_S) provide a shift register control function.

4,248,268

FLUID CONTROL SYSTEM

J. Robert Choate, P.O. Box 2409, Rochester, N.H. 03867

Division of Ser. No. 810,620, Jun. 27, 1977, abandoned. This application Feb. 9, 1979, Ser. No. 11,046

Int. Cl.³ F16L *55/04*

U.S. Cl. 138—26 **15 Claims**

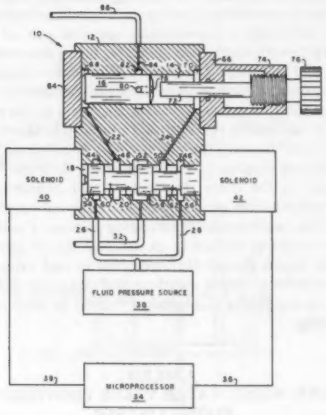
1. A fluid pulse smoother, comprising:

means defining an enclosed accumulator cavity having an input port for receiving a succession of periodic fluid pulses of a predetermined fluid volume, and having an output port from which the fluid emerges;

a chamber having an input coupled to the output port of said cavity and having an output communicating with the input to said chamber;

means for limiting the flow of fluid between the input and the output of said chamber such that a volume of fluid substantially equal to the volume of fluid in a single fluid pulse emerges from the output of said chamber at a substantially constant rate over an interval substantially equal to the period of a single fluid pulse,

whereby the fluid pulses received by said cavity are substantially integrated and smoothed to form, at the output of said chamber, a continuous flow of fluid at a rate which is



substantially equal to the rate at which fluid is received by said accumulator cavity.

4,248,269

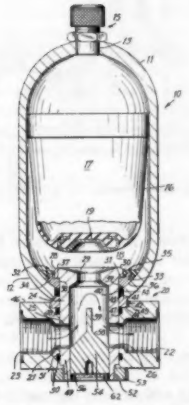
ADJUSTABLE FLOW PULSE DAMPENER

Jacques H. Mercier, Paris, France, assignor to Normand Trust, New York, N.Y.

Filed Aug. 15, 1979, Ser. No. 66,817

Int. Cl.³ F16L *55/00*

U.S. Cl. 138—30 **4 Claims**



1. An adjustable flow pulse dampener device comprising, in combination, a pressure vessel having a gas charging port at one end and an oil port at the other end, a housing mounted at said other end of said vessel, said housing including walls defining a bore forming a through-going flow passage, connector fitting means at the terminal ends of said flow passage for interposing said passage into the fluid flow path of a hydraulic circuit, a gas charging valve mounted in said gas port, a resilient, expansible partition mounted in said vessel and dividing the same into two chambers in communication respectively with said oil port and said gas port, a hollow cylindrical sleeve member mounted in said housing and extending into said pressure vessel through said oil port, the upper end of said cylindri-

cal sleeve member defining a valve seat, said cylindrical sleeve member having its axis aligned with the major axis of said vessel and being rotatable relative to said vessel, valve means on said partition shiftable into sealing position of said valve seat responsive to expansion of said partition, said cylindrical sleeve member including a diametrically opposed pair of apertures extending therethrough, said apertures being disposed in registry with said bore in said housing, baffle means mounted in said cylindrical sleeve member between said apertures for precluding direct fluid flow from one said apertures to the other, and means for adjustably rotating said cylindrical sleeve member relative to said housing thereby partially to offset said aperture from said bore thereby to restrict the fluid flow path from one said fitting to the other, the end of said cylindrical sleeve member remote from said oil port extending outwardly beyond said housing, said outwardly extending portion of said cylindrical sleeve member including an external thread portion, and clamp nut means threadedly connected to said extending end of said cylindrical sleeve members and engaging said housing for locking said sleeve in a selected rotated position relative to said housing.

4,248,270

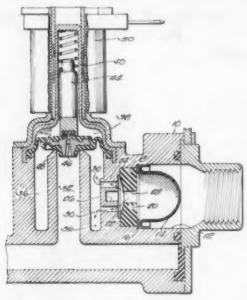
REDUCED NOISE WATER VALVE PROVIDED WITH FLOW CONTROL

E. A. Ostrowski, Mt. Prospect, Ill., assignor to The Singer Company, Stamford, Conn.

Continuation of Ser. No. 906,616, May 16, 1978, abandoned. This application Jan. 11, 1980, Ser. No. 111,306

Int. Cl.[3] **F15D** *1/00, 1/08*

U.S. Cl. 138—45 **9 Claims**



1. The combination with a water valve having a body provided with an inlet and a resilient centrally apertured flow control device mounted in the inlet and having a dashed downstream face and deformed by inlet pressure to provide generally uniform flow through the device with varying inlet pressure,

of means for reducing the flow noise comprising,

a partition in the inlet, downstream of the flow control device, having a blind hole therein in alignment with the central aperture of the flow control device surrounded by an annular surface which is engaged by the dished downstream face of the flow control device as the device deflects under inlet pressure,

a plurality of first ports through the partition from said annular surface to the outlet side of the partition and subject to being closed off by said flow control device as the flow control device deflects against the annular surface,

a plurality of grooves in said annular surface, one end of each groove communicating with said blind hole to receive flow passing through the flow control device under all flow conditions, and

a plurality of second ports through the partition each located in one of said grooves remote from the blind hole and leading to the outlet side of the partition.

4,248,271

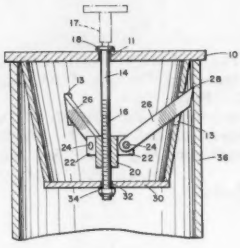
LOCKING CAP FOR PIPE OPENINGS

James N. Burgess, 6678 Cibola Rd., San Diego, Calif. 92120

Filed Jun. 8, 1979, Ser. No. 46,834

Int. Cl.[3] **F16L** *55/10*

U.S. Cl. 138—89 **1 Claim**



1. A locking cap for pipe openings comprising:

a pipe casing end cover formed as a circular disc seatable over the pipe end opening to close off the interior of the pipe casing,

a locking cap housing shaped as a hollow frustum of a cone projecting from one face of said cover and fitable within the interior of the pipe casing when said cover is seated over the pipe end,

said housing having a plurality of spaced apertures in its side wall,

a guide bar secured across a diameter of the open end of said cap housing,

a threaded control bolt supported by said cover and said guide bar, and rotatably mounted in the center of said cap housing;

a traveling bushing threaded on said control bolt and movable thereon when said control bolt is rotated,

a plurality of locking arms with their first ends pivotally connected to said traveling bushing and extending radially therefrom through said cap housing apertures such that the second ends of said locking arms engage the interior wall of the pipe casing when said bushing is drawn towards said cover,

said locking arms being oriented toward said end cover and at an acute angle to said control bolt when the locking cap is fully unlocked,

said second ends of the locking arms being shaped to a pointed tip to engage the interior wall of the pipe casing to secure said locking cap in place, and

means for rotation of said control bolt.

4,248,272

SHED SENSING STOP MOTION SYSTEM FOR HIGH SPEED LOOMS

Marlin V. Wilson, Barboursville, Va.; Larry C. Nickell, Lewisburg, and John L. McCormack, Fairlea, both of W. Va., assignors to Appalachian Electronic Instruments, Inc., Ronceverte, W. Va.

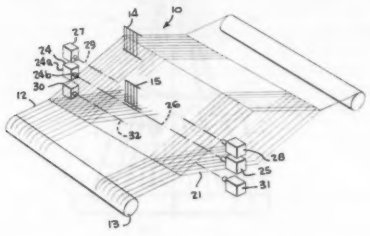
Filed Oct. 25, 1979, Ser. No. 88,284

Int. Cl.[3] **D03D** *51/28;* **G01N** *21/28*

U.S. Cl. 139—353 **22 Claims**

1. Automatic loom stopping apparatus for detecting yarn breakage or improper shedding defects and generating loom stop signals to be associated with a loom wherein warp yarns are displaced during weaving in two shed sheets of yarn periodically to an open shed condition locating the shed sheets at upper and lower limit shed positions, the apparatus comprising at least two vertically spaced monitoring light beam units

respectively including a first and second light detector positioned adjacent the warp yarn path between the supply end and the weaving zone of the loom and including means forming first and second horizontal transverse light beams perpendicular to the warp yarns spanning the warp yarn path, one of said light beams forming a center beam located to pass through the open shed to be interrupted by any portion of a warp yarn or broken end occurring when the shed is open and the second light beam being located to be interrupted by one of the shed sheets occupying the upper or lower limit shed positions, said detectors each having means providing detector signals responsive to interruption of the associated light beam by yarns passing therethrough, signal processing means for producing



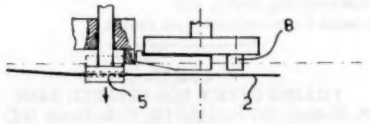
processed signals responsive to said detector signals including means for producing delayed and narrowed pulse signals from the detector signals of said second detector responsive to interruption of the second light beam by a shed sheet at the upper or lower limit shed position to produce a short duration window pulse during only a predetermined midtime portion of the period when the shed is open, a first gate circuit receiving the processed signals from said first detector and the window pulses for producing a gate defect signal when yarn defects causing interruption of said first light beam occur during the open shed periods signified by the window pulses, and stop relay means activated responsive to said gate defect signals to stop the loom.

4,248,273

STIRRUP MACHINE

Del F. Marcello, Via Chisimaio, 43/7 - 33100 Udine, Italy

Filed Jun. 18, 1979, Ser. No. 49,248
Claims priority, application Italy, Feb. 28, 1979, 83341 A/79
Int. Cl.³ B21F *1/00*
U.S. Cl. 140—105 **3 Claims**



1. A stirrup machine for bending stock material such as bars, wire, strips or the like comprising:

advancing and reversing means for selectively advancing and reversing the feed of the stock material;

bending means comprising a fixed, dual prong central fork having an exit end, the stock material being positioned between the two prongs and extending out through the exit end for guiding and supporting the stock material in a bending plane, and a bending pin rotatable in the bending plane about the exit end of the central fork for bending the stock material extending therefrom, around the central fork in a clockwise or counterclockwise direction;

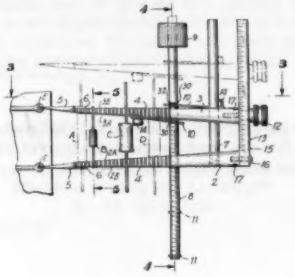
shear and guide means positioned between the advancing and reversing means and the bending means for guiding the stock material in a direction transverse to the direction of stock material feed, for disengaging the stock material from the bending means and displacing the stock material out of the bending plane and for retracting the stock material into the bending plane between the dual prongs of the bending means.

4,248,274

LEAD BENDING TOOL

Miguel R. Lamoglia, 323 W. 43rd St., Apt. 21, New York, N.Y. 10036

Filed Apr. 2, 1979, Ser. No. 25,847
Int. Cl.³ B21F *45/00*
U.S. Cl. 140—106 **6 Claims**



1. A device for bending the leads of electronic components which may vary in length, comprising:

a pair of opposed elongated bending arms, at least a portion of each of said arms having the shape of a right triangle in plan with the hypotenuses thereof facing each other, with the bending distance between the outer edges of each said portion being substantially constant over its length, the distance between said hypotenuses varying to accommodate electronic components of different lengths, and to ensure that the distances between the ends of the component and the bends in the lead are equal, and with each arm terminating in a measuring tip,

a plurality of grooves perpendicular to said outer edges in the upper surfaces of said arms, whereby for a specified bending distance, each pair of grooves in the two arms provides a different length supporting surface for the leads of a component,

means for moving said arms toward and away from each other, and

means for fixing the position of said arms relative to each other.

4,248,275

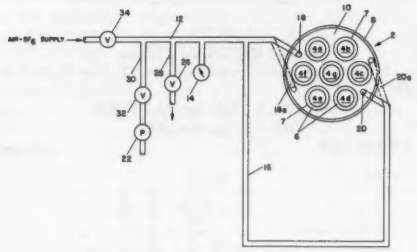
METHOD FOR OBTAINING UNIFORMLY MIXED GASES IN A BALL MOLD

Thomas F. Reed, Akron, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 871,065, Jan. 20, 1978, Pat. No. 4,166,484, and Ser. No. 821,002, Aug. 1, 1977, said Ser. No. 60,316. This application Feb. 9, 1979, Ser. No. 10,767
Int. Cl.³ B65B *31/02*
U.S. Cl. 141—4 **5 Claims**

1. A method of rapidly pressurizing a ball mold chamber with a mixture of air and a second gas while the chamber is sealed from the atmosphere, said chamber being defined by the sections of a mold for joining together ball halves and by a plurality of said ball halves lodged in cavities in said mold sections, and said mold sections having been closed to a position in which the adhesive coatings on the edges of said ball halves are near to but not engaging each other and in which the outer peripheries of said mold sections are in sealing engagement with one another, comprising the steps of withdrawing

air through a port in said chamber until the pressure in the chamber is reduced to 15 to 35 kPa absolute, introducing said mixture of gases into said chamber through a port wherein said



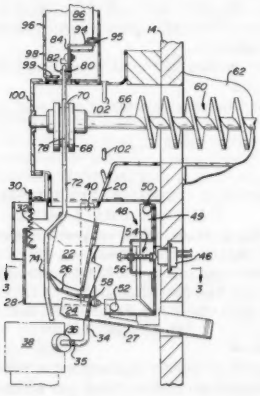
second gas has a permeability through the ball wall of from 1% to 90% to that of air and is present at a level of from 10 to 92 mole percent of the total of the gas mixture.

4,248,276

ICE DISPENSER WITH ANTI-JAMMING MEANS

Michael P. Gosnell, Easton, Pa., assignor to Follett Corporation, Easton, Pa.

Filed May 23, 1979, Ser. No. 41,584
Int. Cl.[3] B65B *1/06, 1/30*
U.S. Cl. 141—87 **11 Claims**



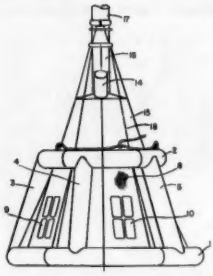
1. An ice dispenser comprising a housing containing ice particles to be dispensed through a spout, means for dispensing ice through said spout, an anti-jamming rod in said spout, means connected to the rod for moving an end portion of the rod in said spout, and means for stopping dispensing of ice by said first mentioned means in response to detection of interference with said movement of said rod.

4,248,277

BELL-SHAPED DEVICE FOR APPARATUS FOR CHARGING DUSTY MATERIALS

Jean-Pascal Hanrot, Aix en Provence, and Jacky Volpeliere, Mimet, both of France, assignors to Aluminum Pechiney, Lyons, France

Filed Mar. 26, 1979, Ser. No. 24,120
Claims priority, application France, Apr. 10, 1978, 78 11000
Int. Cl.[3] B65B *3/18*
U.S. Cl. 141—93 **7 Claims**



1. A device for charging pulverulent or granular materials also containing fine particles which are likely to fly around, during the formation of a heap of such materials, to trap and to recycle the flying particles comprising a pulverulent or granular material feed column, a rigid charging chamber, an articulated suspension, axially connecting the feed column with the charging chamber, a suction column for the said fine particles, including from the bottom to the top:

(a) a light charging chamber in the shape of a truncated pyramid or truncated cone having at least two polygonal or toric crowns of inflatable tubes arranged in spaced planes, rigidifying cross-members connecting the tubes and a flexible skirt enclosing the space between the tubes, an inlet opening in the skirt for the passage of air,

(b) a flexible hopper connected to the light charging chamber,

(b_1) a material feed nozzle in communication with the flexible hopper,

(c) a connecting sleeve between the flexible hopper and the material feed nozzle,

(d) at least one dust suction nozzle having its inlet in the vicinity of the sleeve for communicating the device with a dust-removing device, and

(e) means for movement of the device.

4,248,278

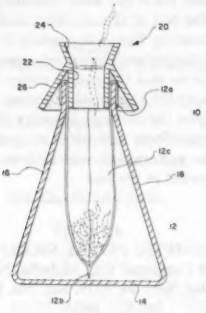
FILLING DEVICE FOR FREEZER BAGS

Carl N. Blodgett, 217 Pineridge Ct., Wake Forest, N.C. 27587

Filed Jul. 11, 1979, Ser. No. 56,604
Int. Cl.[3] B65B *39/06*
U.S. Cl. 141—316 **8 Claims**

1. A bag support and filling device for maintaining a freezer bag having an open top in an open position for easy filling such as in the home freezing of fruits, vegetables and the like, comprising: a base support unit including upstanding sides with upper terminal edges that includes support means for being inserted into a cuff area formed by turning back a top portion of said open top bag over the outside of said support means so as to define an interior open top portion of the bag about the inside of said support means; funnel means adapted to be inserted into said support means for facilitating the filling of the bag supported therein and to protect the top inner portions of the bag from exposure to the food product being filled within said bag, said funnel means including an integral lower generally inverted V-shaped base for fitting over the upper terminal

edges of said sides and a top filling portion extending upwardly from said lower generally inverted V-shaped base, said lower inverted V-shaped base including an inner insert wall that extends around said funnel means and is designed to be inserted interiorly of said support means and downwardly into the defined interior opening top bag portion for protecting this portion of said bag from exposure to product material being filled into said bag, said lower generally inverted V-shaped lower base portion further including an outer skirt that joins said inner insert wall and projects generally outwardly and



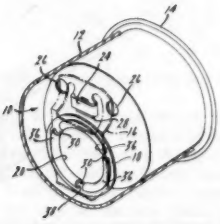
downwardly therefrom over the upper terminal edges of said sides and the cuff portion of said bag disposed outwardly of said sides so as to define an open generally inverted V-shaped space around said funnel means between said inner insert wall and said skirt that acts to receive the upper terminal edges of said sides with said sides acting to support said entire funnel means by projecting upwardly into said defined V-shaped space between said inner insert wall and said skirt, whereby said skirt portion of said funnel means shields and protects the exposed cuff area of said bag from spillage of the product material being filled into said bag.

4,248,279

TAMPER RESISTANT FUEL FILLER RESTRICTOR ASSEMBLY

Helmut Warmbold, Sterling Hgts., Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed May 3, 1979, Ser. No. 35,676
Int. Cl.³ B67C *3/34*
U.S. Cl. 141—348 **7 Claims**



5. A restrictor assembly for a fuel tank filler tube for preventing filling the fuel tank with a leaded fuel nozzle of a known diameter and permitting filling the fuel tank with an unleaded fuel nozzle of a smaller known diameter comprising:

A. a cup-shaped housing member formed of a ductile material and fixedly secured to the filler tube adjacent the outer end thereof remote from the fuel tank;

B. means defining an aperture through said housing member along the axis of the filler tube;

C. a door member carried by said housing member for pivotal movement with respect thereto between a position substantially blocking said aperture and positions opening said aperture;

D. a ring-shaped reinforcing member positioned adjacent said aperture, and having a plurality of peripherally spaced projections extending radially inwardly to positions defining a circular plane of larger diameter than the unleaded fuel nozzle diameter and of smaller diameter than the leaded fuel nozzle diameter, thereby preventing engagement of said leaded fuel nozzle with said door member and permitting engagement of said unleaded fuel nozzle with said door member to allow opening said aperture upon insertion of said unleaded fuel nozzle; and

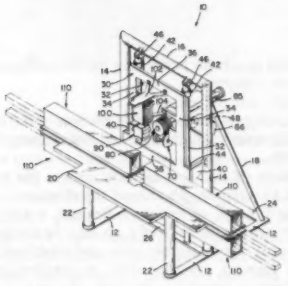
E. means defining a plurality of peripherally spaced tabs in said housing member adjacent said aperture crimpingly formed in interdigitated relationship with said reinforcing member projections to axially and radially secure said reinforcing member to said housing member.

4,248,280

METHOD AND MACHINE STRUCTURE FOR FINGER JOINTING OF LUMBER

Keith A. Taylor, P.O. Box 626, Whitefish, Mont. 59937

Filed Dec. 7, 1978, Ser. No. 967,277
Int. Cl.³ B27F *1/16*
U.S. Cl. 144—3 R **21 Claims**



10. Apparatus for making impression type finger joined lumber, comprising:

(1) a support frame means having a front side and a rear side and including longitudinally aligned infeed and outfeed conveyor means spaced outwardly from said front side between which conveyor means is a work station,

(2) a vertically reciprocally movable carrier frame means supported on said support frame and movable through a predetermined amount of vertical travel,

(3) a horizontally movable secondary frame means supported on said carrier frame means for movement with said carrier frame,

(4) trim saw means and shaper saw means supported on said horizontal secondary frame means such that said trim and shaper saw means can be moved horizontally outwardly to a first operative portion at said work station and retracted to a nonoperative second position, said trim and shaper saw means in the operative position passing vertically through said work station when said carrier frame is moved through said travel distance,

(5) adhesive applying means supported on said secondary frame for independent horizontal movement such that it is movable between an outward operative position and a retracted inoperative position and when in the operative position, is disposed to pass through said work station when said carrier frame is moved through its travel distance,

(6) heating and forming die means supported on said carrier frame means for movement into and out of said work

station upon said predetermined amount of travel distance by said carrier frame means, and

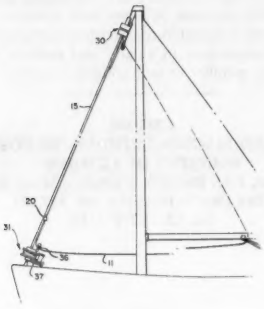
(7) power and actuating means for said frames, said saws, said adhesive applying means and for said die means.

4,248,281

ROLL-REEFING JIB SAIL

Frederick E. Hood, Marblehead, Mass., assignor to Hood Enterprises, Inc., Marblehead, Mass.

Filed Jun. 18, 1979, Ser. No. 49,422
Int. Cl.³ B63H *9/08*
U.S. Cl. 114—106 **10 Claims**



1. Jib furling apparatus permitting partial reefing of a jib sail, said apparatus comprising:

a torsionally stiff luff element;

a jib sail having the major central portion of the length of its luff continuously attached to said luff element for rotation therewith;

at the bottom of said luff element, means for rotating the element to wrap the jib around the element;

also at the bottom of said luff element, a tack attaching means to which the tack of a jib may be secured;

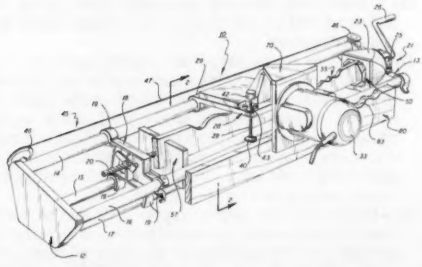
bearing means interposed between said attaching means and the luff element together with its rotating means, said bearing means permitting the tack of a jib to freely lag in rotation and wrapping relative to the center portion of the jib during furling thereof.

4,248,282

TEMPLATE GENERATOR

Richard W. Waldron, 706 Pauline Ave., Utica, N.Y. 13502, and James S. Cieri, 9 New Paris Rd., New Hartford, N.Y. 13413

Filed Jul. 16, 1979, Ser. No. 57,589
Int. Cl.³ B27C *5/00*
U.S. Cl. 144—144 R **14 Claims**



1. In a woodworking machine of the type wherein an element is capable of being mounted in a bed between a head stock and a tail stock, said machine having a carriage removably supporting a router thereon, guide means for supporting the carriage for both axial movement along the length of the bed and pivotable movement in a vertical plane whereby the router cutter is positionable in reference to the work, and a template follower mounted in the carriage that is arranged to ride along the working profile of a template to vary the vertical position of the cutter as the carriage traverses the bed, the improvement comprising

an adaptor that is positionable upon the carriage in place of the router,

a pattern follower supported in the adaptor that is located at the normal router cutter position whereby the pattern follower will trace the axial contour of an element supported in the bed of the machine, and

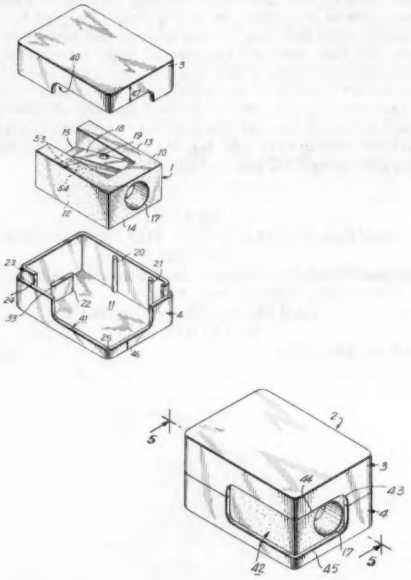
a vertical mounting flange depending from the adaptor for removably supporting the router adjacent to a side wall of the carriage so that the router cutter is coaxially aligned with the axis of the template follower when the adaptor is mounted upon the carriage whereby the cutter will generate a template from a blank in response to the displacement of the pattern follower as it moves axially over a piece supported in the bed.

4,248,283

COSMETIC PENCIL SHARPENER

Lowell Kaye, 14 Cottontail Rd., Melville, N.Y. 11746

Filed Nov. 26, 1979, Ser. No. 97,560
Int. Cl.³ B43L *23/00*
U.S. Cl. 145—3.31 **15 Claims**



1. A cosmetic pencil sharpener comprising a sharpener unit including a body of rectangular configuration having a top, a bottom, parallel sides and parallel front and rear ends, said sharpener unit further having a conical bore with an aperture at said front end sized to receive a cosmetic pencil to be sharpened, sharpener means on said sharpener unit operatively positioned with respect to said bore for sharpening a cosmetic pencil inserted thereinto, and upper and lower separable members constituting a casing for said sharpener element, said upper and lower members being of rectangular configuration conforming to that of said sharpener unit and being separably engageable with one another and with said sharpener unit for

embracing said sharpener unit, said sharpener unit being engaged by said casing members to provide a first space therewith at said rear end and a second space between the top of the sharpener unit and said upper casing member, said first and second spaces communicating with one another to form a chip collector chamber for shavings removed from the pencil during sharpening thereof, said upper and lower members having co-extensive elongate cut-out portions extending along mutually perpendicular sides cooperatively defining an L-shaped opening through which a portion of one of said sides and the front end of said body of said sharpener unit is exposed inclusive of said aperture.

4,248,284

HAND SAW WITH AN INTERCHANGEABLE SAW BLADE

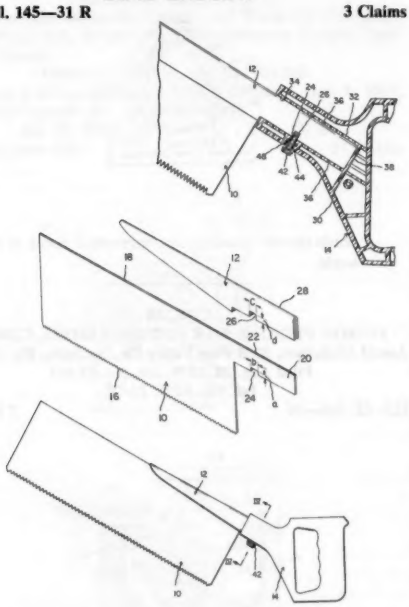
Masaaki Tomosada, Ono, Japan, assignor to Razor Saw Manufacturing Co., Ltd., Ono, Japan

Filed Sep. 10, 1979, Ser. No. 74,016

Claims priority, application Japan, Apr. 17, 1979, 54-51453[U]

Int. Cl.³ B27B *21/00*

U.S. Cl. 145—31 R **3 Claims**



1. A hand saw with an interchangeable saw blade comprising, in combination:

a saw blade with a tongue, said tongue having a notch formed in the edge opposite the back of the tongue;

a reinforcing member for increasing the rigidity of said saw blade and said tongue, said reinforcing member having a substantially U-shaped cross section capable of being placed over the back of the saw blade with the inner surface of the bight portion of the "U" in contact with the backs of said tongue and said saw blade and the inner surfaces of the leg portions of the "U" in contact with the side faces of said tongue and said saw blade, said reinforcing member having notches formed in the leg portions of the "U" at a location corresponding to said notch in said tongue;

a molded handle having an opening for receiving said tongue of the saw blade with said reinforcing member placed on the tongue and the blade with a close tolerance between the handle and said reinforcing member, said handle including a set screw threadedly engaged with the handle at the location corresponding to said notches in the tongue and the reinforcing member when said tongue and the reinforcing member are fully inserted in said opening, said opening being defined by a plurality of ribs integrally formed with said mold handle, and said notches in said tongue and said reinforcing member being arranged such that when said set screw is thread-inserted into the handle, its inner end engages only said tongue of the blade within said notch.

4,248,285

SAFETY NUT AND METHOD FOR MAKING

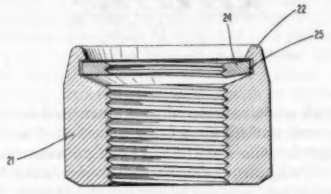
Christian Flaig, Muehlstrasse 1, 7209 Aldingen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 757,497. This application Oct. 26, 1978, Ser. No. 954,845

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1976, 7610740[U]; Aug. 26, 1976, 2638560

Int. Cl.³ F16B *39/38*

U.S. Cl. 411—246 **2 Claims**



1. A safety nut including a threaded portion and a safety portion extending coaxially therebeyond, said safety portion including an opening having a circular inner wall; an elastic, circumferentially endless disk situated in said opening of said safety portion; said disk formed of spring steel and having a non-circular outer periphery bearing against said inner wall of said opening at circumferentially spaced locations; said disk being arranged for limited axial movement in said opening relative to said nut; an inner portion of said disk including a threaded aperture aligned with a threaded passage in said threaded portion of said nut and being engageable with a bolt threadedly inserted into said nut; the thickness of said inner portion of said disk being substantially the same as the pitch of the nut thread; at least one but not all portions of said disk being deformed to axially offset a corresponding portion of said disk thread relative to said nut thread by an amount within the range of one-quarter to one-half of the pitch of the latter so that said axially offset portion is elastically deflected by an inserted bolt to axially clamp the bolt in place.

4,248,286

SAFETY SUPPORT ASSEMBLY FOR PNEUMATIC TIRES

Walter W. Curtiss, Jr., Akron, and Grover W. Rye, Cuyahoga Falls, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

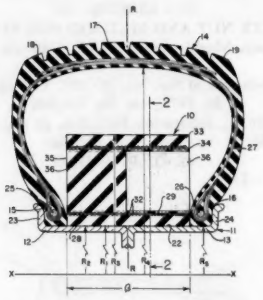
Filed Jun. 30, 1978, Ser. No. 920,667

Int. Cl.³ B60C *17/04*

U.S. Cl. 152—158 **11 Claims**

1. A safety support assembly comprising a wheel rim, a pneumatic tire of the type having a tread portion and bead portions, a cylindrical surface on said rim, said bead portions being mounted on said cylindrical surface, a generally cylindrical ring member of flexible resilient material having an inner cylindrical band at the inner periphery with an inner diameter not greater than the diameter of said cylindrical surface for mounting said ring member on said rim, said ring member having an outer cylindrical band at the outer periphery spaced from said inner cylindrical band and having an outer diameter less than the diameter of said tread portion of the tire in the

inflated condition and greater than the diameter of said bead portions, said ring member being engageable by said tread portion in the deflated condition of said tire, an intermediate portion of said ring member between said inner band and said outer band, said intermediate portion including separate unconnected radially extending webs spaced apart circumferentially of said ring member, said outer band including a first circumferentially extending annular belt having reinforcing



cords of high modulus material, said inner band including a second circumferentially extending annular belt of reinforcing cords of high modulus material and having a width measured axially of said ring member substantially equal to the distance separating said bead portions of said tire mounted on said rim so that said inner band is confined between said second circumferentially extending annular belt, said cylindrical surface of said rim and said bead portions.

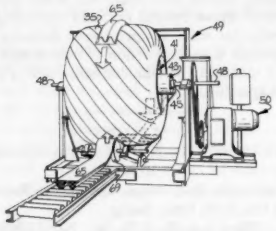
4,248,287

METHOD OF AND APPARATUS FOR MAKING FLOTATION TIRE AND TIRE PRODUCT

Harold E. Christman, Santa Cruz, Calif., assignor to Brad Ragan, Inc., Spruce Pine, N.C.

Filed Nov. 8, 1977, Ser. No. 849,663
Int. Cl.³ B60C *9/14, 11/05*
U.S. Cl. 152—354 R **6 Claims**

1. A flexible sidewall flotation tire comprising:
a tread for engaging a traction surface; and
a carcass for supporting said tread and having
a pair of spaced bead portions for engaging a rim,
a pair of sidewall portions extending from respective bead portions for imparting flexibility to the tire, and
a tread bearing portion extending between said sidewall portions for supporting said tread;
each of said sidewall portions being defined by a plurality of built-up superposed layers of cord containing elastomeric material sheet with the layers arranged with cords therein directed generally radially from said bead portions; each of said layers defining each of said sidewall portions being formed by a plurality of elongate strips of sheet with longitudinal side edge portions of adjacent strips lapped one over another in generally triangular zones converging radially outwardly of said sidewall portions;
said tread bearing portion being defined by a plurality of built-up superposed layers of cord containing elastomeric material sheet with some layers arranged with cords therein directed circumferentially about said carcass and the remainder of said layers arranged with



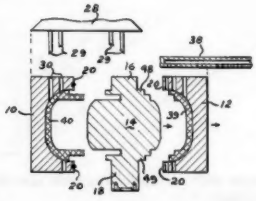
cords therein crossing circumferential cords at a right angle.

4,248,288

FUSION PROCESS FOR FORMING SHELL CORES

Anatol Michelson, 3235 Pine Valley Dr., Sarasota, Fla. 33579

Filed Aug. 20, 1979, Ser. No. 67,818
Int. Cl.³ B22C *13/08*
U.S. Cl. 164—16 **7 Claims**



1. A process for forming a foundry shell core product without the application of heat thereto, said process comprising:
(a) forming a mandrel into predetermined configuration to include end-forming portions disposed adjacent head and stem portions thereof and each end-forming portion having a greater transverse dimension than said head and stem portions,
(b) inserting said mandrel of predetermined configuration in operative disposition between core box sections,
(c) closing said core box sections in surrounding relation about said head and stem positions of said mandrel,
(d) introducing a first supply of binder coated granular material into a core cavity defined between said core box sections and the external surface of said mandrel,
(e) passing a first supply of catalyst gas through said first supply of granular material causing hardening thereof and

the formation of correspondingly configured core portions,

(f) separating said core box sections with formed core portions therein and removing said mandrel therefrom,

(g) repositioning said core box sections with core portions therein into working position a predetermined spaced apart distance from one another,

(h) introducing a second supply of binder coated granular material in spaced apart end portions of said core portions and in engagement with both said core portions,

(i) moving said core portions toward one another to a closer spaced apart distance thereby compacting said second supply of binder coated granular material into firm engagement with both said core portions, and

(j) introducing a second supply of catalyst gas into said second supply of granular material causing hardening thereof and fusion thereof with said first supply of granular material thereby joining said core portions and forming an integral one piece shell core.

4,248,289

DIE CASTING MACHINE

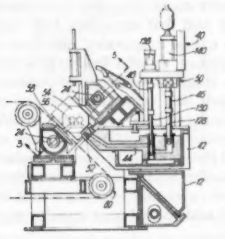
Guido Perrella, Senneville, Canada, and William E. Thompson, Anderson, Ind., assignors to DBM Industries Limited, Quebec, Canada

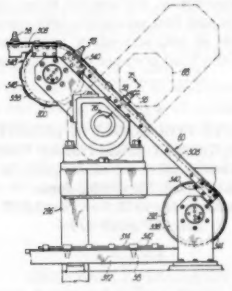
Filed Jul. 31, 1978, Ser. No. 929,148

Claims priority, application United Kingdom, Dec. 1, 1977, 50179/77; Canada, Jun. 12, 1978, 305228

Int. Cl.³ B22D *17/02, 17/22, 17/24, 17/30*

U.S. Cl. 164—153 **11 Claims**





6. In a die-casting system of the type comprising, in combination:

(a) die-casting machine having a frame with two pairs of spaced, parallel cylinder assemblies mounted thereon, each pair of assemblies supporting a mold half and being opposed to the other pair of assemblies carrying the other mold half, each cylinder assembly of each pair comprising (i) a stationary piston secured to the frame, (ii) a piston shaft secured to and coaxial with the piston, said shaft extending across to a connection with an opposed piston of the other pair, (iii) a cylinder mounted on the piston and shaft for reciprocal movement thereon in response to incompressible fluid injected therein on either side of said piston; (iv) means connecting said cylinder to a said mold half, whereby injection of fluid into the cylinders at the crown ends of the pistons forces the cylinders and mold halves together and injection of the fluid at the skirt ends of the pistons forces the cylinders and mold halves apart with the terminal force from opening the cylinders being taken by the piston shaft; and (v) means for deceleration of said cylinders to eliminate closing shock; the improvements comprising

(b) evaporative heat control means for said molds;

(c) a metal injection system including means for injecting metal into the molds along the parting plane of said molds and means associated with said metal injection system for subsequent drainage of unsolidified metal from said runner and a self-contained molten metal supply with heating means for said metal supply and

9. In a die-casting system of the type including, in combination:

(a) die-casting machine having a frame with two pairs of spaced, parallel cylinder assemblies mounted thereon, each pair of assemblies supporting a mold half and being opposed to the other pair of assemblies carrying the other mold half, each cylinder assembly of each pair comprising (i) a stationary piston secured to the frame, (ii) a piston shaft secured to and coaxial with the piston, said shaft extending across to a connection with an opposed piston of the other pair, (iii) a cylinder mounted on the piston and shaft for reciprocal movement thereon in response to incompressible fluid injected therein on either side of said piston; (iv) means connecting said cylinder to a said mold half, whereby injection of fluid into the cylinders at the crown ends of the pistons forces the cylinders and mold halves together and injection of the fluid at the skirt ends of the pistons forces the cylinders and mold halves apart with the terminal force from opening the cylinders being taken by the piston shaft; and (v) means for deceleration of said cylinders to eliminate closing shock; the improvements comprising:

(b) evaporative heat control means for said mold halves including a closed cooling system in each of the mold halves with passages therein for the circulation of liquid through the molds; a fluid inlet valve associated with the passages; a make-up pump for injecting cooling liquid into the passages of the molds via said inlet valve; and a pressure responsive limiting valve associated with the passages for releasing evaporated liquid from the passages when boiling occurs therein at a predetermined pressure; and means associated with the pressure responsive limiting valve for directing condensed liquid back to a supply source thereof;

(c) a metal injection system including means for injecting metal into the molds on the parting line of said molds and means associated with said metal injection system for subsequent drainage of unsolidified metal from said runner and a self-contained molten metal supply with heating means for said metal supply;

(d) means for supporting a cast part in a fixed position between said mold halves after said mold halves have been withdrawn therefrom; and

(e) a cable type transfer system to carry a casting from the die casting machine to a remotely positioned trimming machine or other secondary operation.

4,248,290

FOUNDRY MOLDING MACHINE AND METHOD

Rudolf Hermes, Parma, Ohio, assignor to The Osborn Manufacturing Corporation, Cleveland, Ohio

Filed Aug. 6, 1979, Ser. No. 64,008

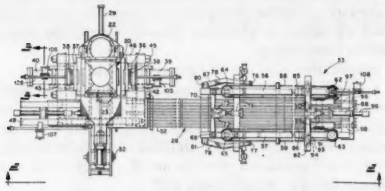
Int. Cl.³ B22C *19/04, 9/20*

U.S. Cl. 164—154 **48 Claims**

1. A horizontal stack foundry molding machine, comprising forming means for forming molds,

variable speed pusher means for moving each newly formed mold from said forming means toward a station at which a plurality of molds may be movably stacked for casting,

control means responsive to said forming means for controlling the speed of said pusher means to engage such newly



formed mold at a relatively slow speed and then to move the latter toward such station, and

sensor means for sensing a physical parameter of each newly formed mold, and wherein said control means includes means for responding to such parameter to control movement of said pusher means.

4,248,291

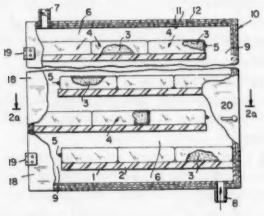
COMPACT THERMAL ENERGY RESERVOIRS

Seymour Jarmul, 96 Windsor Gate Dr., North Hills, N.Y. 11040

Filed Oct. 18, 1978, Ser. No. 952,293

Int. Cl.[3] **F28D** *17/00*

U.S. Cl. 165—4 **5 Claims**



1. Compact thermal energy reservoir comprising:

(a) an enclosure having at least one opening which provides access therein and a closure for said opening;

(b) a plurality of adjacent, elongated mesh shelves within said enclosure, all edges of which abut said enclosure and;

(c) a plurality of layers of heat storage material, each layer supported by one of said shelves and comprising at least one flat, fluid-tight package containing an inorganic salt melting between about 32° F. and about 212° F., each of said shelves being made essentially impermeable to fluid over a major portion of its area by one or more of said flat, fluid-tight packages of salt, the entire fluid permeable area being at an end of said shelf which is opposite the fluid permeable end of each adjacent shelf,

wherein adjacent shelves and said enclosure form a single fluid conduit separating each layer, each conduit being in fluid communication with each adjacent conduit.

4,248,292

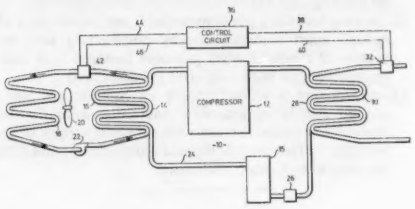
HEAT TRANSFER CONTROL CIRCUIT FOR A HEAT PUMP

William H. Beacham, Putnam, Canada, assignor to 379235 Ontario Ltd., Putnam, Canada

Filed May 11, 1979, Ser. No. 38,128

Int. Cl.[3] **F24F** *3/00;* **F25D** *17/02;* **F25B** *29/00;* **F25D** *11/00*

U.S. Cl. 165—50 **5 Claims**



1. A heat pump comprising:

a motor compressor,

a condenser,

an evaporator,

an expansion valve,

connected in a primary operating loop in which said compressor pumps heat from said evaporator to said condenser,

first secondary heat transfer means and associated conduit means connected in good heat transfer relationship with said evaporator to carry a first secondary heat transfer fluid through said first secondary heat transfer means to transfer heat to said evaporator, and flow means to cause said secondary heat transfer fluid to flow through said first heat transfer means and associated conduit,

second secondary heat transfer means and associated conduit means connected in good heat transfer relationship with said condenser to carry a second secondary heat transfer fluid through said second secondary heat transfer means to transfer heat from said condenser and second flow means to cause said secondary heat transfer fluid to flow through said second heat transfer means and associated conduit,

sensing means mounted in said heat pump for sensing a variable quantity which is proportional to the head pressure of the compressor, and control means to control said flow means in said first secondary heat transfer means to vary the flow of said secondary heat transfer fluid inversely with the head pressure of said compressor.

4,248,293

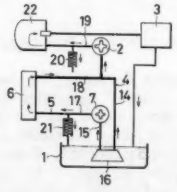
APPARATUS FOR COOLING ENGINE OIL

Takashi Kamezaki, Tokyo; Yoshiaki Hidaka, Wako, and Tetsuo Tahara, Kamifukuoka, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Shinbashi, Japan

Filed Jan. 16, 1979, Ser. No. 3,977

Int. Cl.[3] **F01P** *5/10*

U.S. Cl. 165—51 **7 Claims**



1. An apparatus for cooling engine oil including an oil reservoir in communication with an internal combustion engine,

said engine including a drive shaft, said cooling apparatus comprising:

(a) a first pump in delivery communication with said oil reservoir and in return communication with said engine;

(b) a second pump also disposed in delivery communication with said oil reservoir;

(c) an oil cooler medially disposed in series with respect to both said first and second pumps, said cooler and said second pump exhibiting, in combination, a parallel relationship with respect to the series combination of said first pump and said engine; and

(d) spacer means for facilitating oil flow between said reservoir, said first pump, said oil cooler, and said second pump,

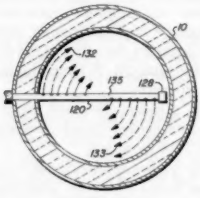
whereby, upon rotation of said drive shaft, rotor elements within each pump are actuated, thereby advancing the oil of the oil reservoir through a cooling circuit defined by the series-parallel relationship set forth above.

4,248,294

SOLAR HOT WATER HEATING SYSTEM

John V. Budzynski, and Donald A. James, both of Scottsdale, Ariz., assignors to Goettl Bros. Metal Products, Inc., Phoenix, Ariz.

Filed May 1, 1978, Ser. No. 901,329
Int. Cl.³ F28D *21/00*
U.S. Cl. 165—104 S **8 Claims**



1. A hot water storage tank for receiving unheated water from a water supply source and for providing heated water to a hot water user, comprising:

(a) an elongated tank having a longitudinal axis;

(b) means defining an inlet in said tank for receiving water from said unheated water supply source;

(c) means defining an outlet for delivering heated water from said storage tank to a user; and

(d) a stratifier tube connected to said inlet, extending into said tank and having a plurality of openings therein, each of said openings having an axis, each of the axes of said openings lying in a common plane, the common plane being perpendicular to said longitudinal axis, each of said openings also positioned to direct a stream of water in a circular pattern about said longitudinal axis.

4,248,295

FREEZABLE HEAT PIPE

Donald M. Ernst, Leola, and James L. Sanzi, Lancaster, both of Pa., assignors to Thermacore, Inc., Lancaster, Pa.

Filed Jan. 17, 1980, Ser. No. 112,901
Int. Cl.³ F28D *15/00*
U.S. Cl. 165—105 **7 Claims**

1. A heat pipe capable of surviving repeated freezing and thawing cycles without damage comprising:

a sealed outer casing;

a heat exchange liquid; and

a porous structure within the sealed outer casing dimensioned with a length approximating the maximum possible depth of liquid when the heat pipe axis is oriented parallel to the force of gravity, and a width less than the span across the inside of the sealed casing, and oriented so that a portion of the porous structure is always at the lowest

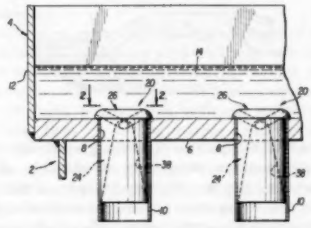
level of liquid within the casing when the liquid spans the diameter of the casing.

4,248,296

FLUID DISTRIBUTOR FOR CONDENSER TUBES

Louis J. Jezek, Federal Way, Wash., assignor to Resources Conservation Company, Seattle, Wash.

Filed Aug. 7, 1979, Ser. No. 64,590
Int. Cl.³ F28D *3/04*; F28F *9/02, 25/02*
U.S. Cl. 165—118 **8 Claims**



1. A fluid distributor for use in the upper end of a vertical condenser tube in a falling film type heat exchanger or the like, for forming a hollow cylindrical film of fluid on the interior surface of said condenser tube, said fluid distributor comprising:

a ferrule, said ferrule including a lower portion having a cylindrical exterior and sized to be received within the upper end of a vertical condenser tube, and an enlarged head portion on the upper end of said lower portion;

the interior of said ferrule having a completely open chamber extending upwardly from the lower end thereof, said chamber including a frusto-conical lower portion defined by a frusto-conical wall and having a diameter at the lower end thereof about the same as the exterior diameter of said ferrule lower portion, and a spherically shaped upper portion defined by a spherical wall and arranged concentrically of the vertical axis of said chamber, said spherical wall being tangent to the upper end of said frusto-conical wall; and

said enlarged ferrule head portion having at least one inlet orifice therein, the axis of said inlet orifice being inclined upwardly from a horizontal plane passing through the upper end of said chamber, and the inner end of said inlet orifice opening tangentially onto said spherical wall defining said spherically shaped upper chamber portion,

whereby fluid entering said ferrule chamber through said inlet orifice is directed both laterally and downwardly against said chamber walls and swirls within the upper end of said chamber to establish an inverted vortex, and to form a rotating, uniform hollow cylindrical film of fluid which flows evenly and without interruption downwardly on the interior surface of said condenser tube.

4,248,297

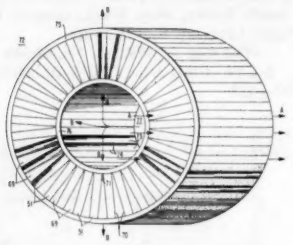
GLASS-CERAMIC ARTICLE AND METHOD OF MAKING SAME

Yu K. Pei, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 650,995, is a continuation of Ser. No. 146,665, May 25, 1971, abandoned, which is a continuation-in-part of Ser. No. 30,859, Apr. 22, 1970, abandoned. This application Mar. 29, 1977, Ser. No. 782,589

Int. Cl.[3] **F28F** *3/00, 7/02*

U.S. Cl. 165—166 **5 Claims**



1. An annular recuperator comprising a plurality of matrices, each of said matrices comprising an assembly of integrally fused tubes arranged in a plurality of layers of tubes superimposed one above the other in successive parallel planes, the tubes within each plane being essentially parallel to each other and transverse to the tubes in adjacent layers, the tubes in each layer forming a series of longitudinal parallel passageways through the matrix wherein the walls of said passageways

(1) have essentially zero porosity,

(2) consist essentially of an inorganic crystalline oxide ceramic material,

(3) have an average coefficient of lineal thermal expansion of about -12 to $+12\times10^{-7}$/°C., over the range 0°–300° C., and

wherein the inner diameter of said passageways is at least 3 times the wall thickness through portions of said walls common to adjacent fused tubes, and wherein the open frontal or cross-sectional area of each face of the matrix containing passageways is at least 32 percent of the cross-sectional area across such face, each of said matrices having a wedge-shaped spacer member bonded to each of a pair of oppositely disposed surfaces of said matrix, said matrices and members forming a structure having an annular configuration and an annular central opening, the arrangement of said matrices providing two flow paths for fluid media passing through said recuperator, one of said flow paths being parallel to the axis of the annular recuperator, the other of said flow paths being transverse to the axis of the annular recuperator and communicating with said central opening.

4,248,298

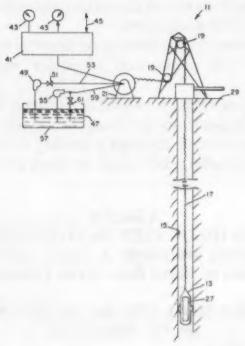
WELL LOGGING EVAPORATIVE THERMAL PROTECTION SYSTEM

Michael D. Lamers, Palos Verdes Estates, and Vincent P. Martelli, Rancho Palos Verdes, both of Calif., assignors to Measurement Analysis Corporation, Torrance, Calif.

Filed Feb. 21, 1979, Ser. No. 13,544

Int. Cl.[3] **E21B** *47/00;* **F25D** *17/02, 23/12*

U.S. Cl. 166—57 **12 Claims**



11. In an evaporative thermal protection system for use in hostile environment well logging applications and including a sonde, for maintaining a payload located within the sonde at a desired cooler temperature than that of the downhole environment, a hostile environment flexible fluidic communication mechanical cable, comprising:

a corrosion and pressure resistant metal tube forming a central cable core, said metal tube having an outside diameter less than 3/16 inch; and

a contrahelically wound multi-stranded high strength, corrosion resistant metal wire rope disposed about said metal tube and providing abrasion protection and carrying most of the cable's load.

4,248,299

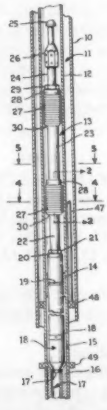
PACKER NOSE ASSEMBLY

George K. Roeder, P.O. Box 4335, Odessa, Tex. 79760

Filed Oct. 2, 1978, Ser. No. 947,695

Int. Cl.[2] **E21B** *33/12*

U.S. Cl. 166—153 **2 Claims**



1. A downhole hydraulically actuated pump assembly of the

free type having a packer nose assembly affixed to one end thereof for enabling the apparatus to be pumped into and out of boreholes, said packer nose assembly comprising:

a mandrel having a lower end portion and an upper end portion; means forming a fishing neck on said upper end portion; a lower fastener means formed on said lower end portion of said mandrel by which said packer nose assembly can be removably affixed to one end of the pump assembly;

an upper and lower cylindrical packer, each having opposed terminal ends, a boss at one terminal end and a sloped face at the other terminal end; and a body portion of a longitudinal length defined by the distance measured between said boss and the sloped face; means forming a longitudinal axial passageway through said body portion of each said packer, said axial passageway having an inside diameter which enables each said packer to be slidably received in a telescoping manner about a marginal longitudinally extending portion of the exterior of said mandrel;

a marginal exterior portion of each said packer being formed into a plurality of concentrically arranged, spaced fins; each said fin being an intergral part of said body and circumferentially disposed about and radiating from said body portion; each said fin being formed by adjacent spaced walls, each said spaced wall being outwardly and downwardly extended and converging towards one another at an acute angle relative to one another, thereby forming the fin which is outwardly reduced in cross-section and which downwardly an outwardly extends from said body;

a lowermost and uppermost sleeve telescopingly received on the exterior of said mandrel, said lowermost sleeve being received between the lower boss of said lower packer and said fastener means on said lower end portion of said mandrel for maintaining said packer properly positioned in fixed relationship relative to said mandrel, said uppermost sleeve being received between the boss of the remaining said packer and the sloped face of the lowermost packer; an upper fastener means formed between said fishing neck and said sloped face of said upper packer; said sleeves and said packers being placed in compression on said mandrel by said upper and lower fastener means for maintaining the packers anchored relative to said mandrel.

4,248,300

METHOD OF AND APPARATUS FOR POSITIONING RETRIEVABLE LANDING NIPPLE IN A WELL BORE STRING

Britt O. Braddick, Houston, Tex., assignor to Texas Iron Works, Inc., Houston, Tex.

Filed Apr. 17, 1978, Ser. No. 897,034
Int. Cl.³ E21B *23/02, 47/10*
U.S. Cl. 166—250 **20 Claims**

3. A method of positioning and testing a retrievable landing nipple in a well bore well string comprising the steps of:

a. lowering a retrievable landing nipple into and sealably anchoring it in the well string; and

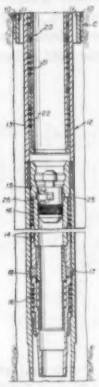
b. applying fluid pressure between the sealably anchored landing nipple and the well string to test for leaks therebetween.

16. An arrangement for controlling fluid flow in a well comprising:

a. a tubular member secured in a well said tubular member having a recess therein;

b. a retrievable landing nipple sealably anchored in the recess of said tubular member;

c. a production string having a smaller internal diameter than the tubular member for conducting flow from the well; and



d. means sealably and removably engaging the production string with said tubular member above said anchored landing nipple.

4,248,301

MICELLAR CRUDE OIL DISPLACEMENT WITH PARTITIONED HYDROCARBON SULFONATES

Fred E. Suffridge, Broken Arrow, Okla., and Victor J. Kremesec, Jr., Berwyn, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jan. 2, 1979, Ser. No. 59
Int. Cl.³ E21B *43/22*
U.S. Cl. 166—252 **8 Claims**

2. In a method of improving the displacement of crude oil through a crude oil containing subterranean reservoir having an injection means in fluid communication through the reservoir with a production means, wherein a saline aqueous micellar fluid containing hydrocarbon sulfonate surfactant in an amount greater than the critical micelle concentration is injected into the reservoir through said injection means and is displaced through at least a portion of the reservoir for displacing crude oil toward said production means, and wherein said hydrocarbon sulfonate surfactant comprises oil and water soluble components, wherein the improvement comprises:

separating oil soluble components from substantially water soluble components of said hydrocarbon sulfonate, and

formulating said micellar fluid with said oil soluble components.

4,248,302

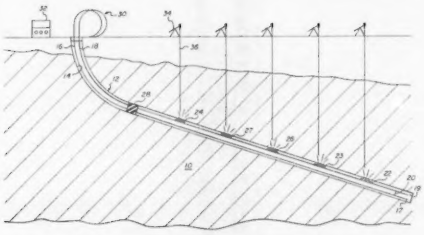
METHOD AND APPARATUS FOR RECOVERING VISCOUS PETROLEUM FROM TAR SAND

Ronald K. Churchman, Carrollton, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Apr. 26, 1979, Ser. No. 33,514
Int. Cl.³ E21B *33/124, 43/24*
U.S. Cl. 166—272 **13 Claims**

1. A method of recovering petroleum from subterranean viscous petroleum tar sands comprising drilling an injection well whose drill path is deviated from the perpendicular, and extends for a major portion of its length into said subterranean viscous petroleum tar sand, inserting casing within said injection well to at least a point just beyond a site determined to be a terminal injection point, perforating said casing at selected locations, running into the bore of said perforated casing a dual tubing string providing a circulation path for the use of through the flowline service tools, at least one of said dual tubing strings having a plurality of spaced apart side pocket

mandrels, providing means for packing off the tubing casing annulus situated between the uppermost side pocket mandrel and the surface of the well, providing means in said side pocket mandrels for regulating the flow of fluids from the bore of the tubing to the outside thereof, drilling and completing a plurality of production wells into said subterranean viscous petroleum tar sands positioned above and along the length of said injection well, circulating a heated fluid through said injection well, said heated fluid flowing through said flow regulator means into said subterranean viscous petroleum tar sands to reduce the viscosity of the petroleum contained therein, and recovering said reduced viscosity petroleum by said production wells.

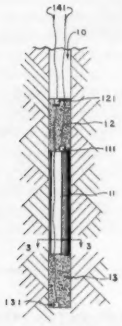


4,248,303

EXPLOSIVE WELL-FRACTURING SYSTEM

John J. Charpentier, Algiers, La., assignor to Xplo Corporation, Gretna, La.

Filed Dec. 1, 1978, Ser. No. 965,620
Int. Cl.[3] E21B *43/263*
U.S. Cl. 166—299 **8 Claims**



1. The method of fracturing wells comprising the following steps:

(a) positioning in the well holes a first, relatively low velocity, supplemental explosive charge at a position below the area to be fractured;

(b) positioning in the well hole a relatively high velocity, central explosive charge at a position next to the area to be fractured and adjacent said first charge;

(c) positioning in the well hole a second, relatively low velocity supplemental explosive charge at a position above the area to be fractured and adjacent the top of said central charge,

(d) detonating said central charge; and

(e) thereafter detonating said first and second supplemental charges.

4,248,304

LARGE SCALE PRODUCTION OF INEXPENSIVE FLOODING POLYMERS FOR TERTIARY OIL RECOVERY

Kenneth G. Phillips, River Forest, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Filed Nov. 16, 1979, Ser. No. 94,991
Int. Cl.[3] E21B *43/22*
U.S. Cl. 166—300 **5 Claims**

1. In a process for recovering oil from underground formations of the type wherein a dilute aqueous solution of an acrylamide polymer is injected into one or more wells the improvement which comprises: establishing near the one or more wells a small chemical plant and a source of acrylonitrile for producing an acrylamide polymer in the form of water-in-oil emulsion, which plant performs the following sequence of steps:

1. Forming a water-in-oil emulsion of acrylonitrile utilizing as an oil source crude oil recovered from the underground formation;
2. Contacting said emulsion with a conversion catalyst under reaction conditions to convert a substantial portion of the acrylonitrile to acrylamide thereby forming a water-in-crude-oil emulsion which contains a substantial portion of acrylamide;
3. Polymerizing the water-in-crude-oil emulsion of acrylamide in the presence of a free radical catalyst to provide a water-in-crude-oil emulsion of acrylamide polymers, and then;

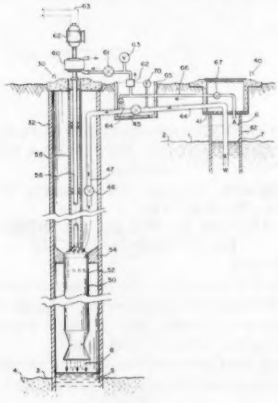
Injecting the water-in-crude-oil emulsion of the acrylamide polymer in the presence of an inverting agent into the underground formation under conditions whereby the formation is contacted with a dilute solution of the acrylamide polymer.

4,248,305

AQUIFER RECHARGE USING NATURAL ENERGY

William L. Scarbrough, 2928 Franklin St.; Jerry L. Norris, 3439 S. Highway 98, both of Lakeland, Fla. 33801, and Joe D. Hardin, Apt. 707, 210 Lake Hollingsworth Dr., Lakeland, Fla. 33803

Filed Mar. 12, 1979, Ser. No. 19,423
Int. Cl.[3] E21B *43/00*
U.S. Cl. 166—305 D **9 Claims**



1. A water transfer system for moving water from a shallow water aquifer to a deep water aquifer for recharging thereof or for dewatering surface soil areas, comprising:

a deep well communicating with the deep water aquifer;

at least one shallow source well communicating with the shallow water aquifer;

siphoning means between each of said source wells and said

deep well for introducing water from the shallow water aquifer into said deep water aquifer; and

vacuum producing means connected to each of said source wells for increasing the water flow therefrom and for maintaining operation of said siphoning means.

4,248,306

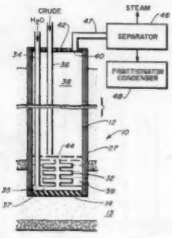
GEOTHERMAL PETROLEUM REFINING

Allan T. Van Huisen, 29456 Indian Valley Rd., Rolling Hills Estates, and Paul E. Griffin, 853 Via Del Monte, Palos Verdes Estates, both of Calif. 90274

Filed Apr. 2, 1979, Ser. No. 25,755

Int. Cl.[3] B01J *21/00*; E21B *43/24*; F28D *15/00*

U.S. Cl. 166—305 R **14 Claims**



7. A geothermal system for refining petroleum oils comprising in combination;

a geological formation including a subsurface geothermal zone having a temperature of at least 300° F.;

well means extending from the surface into the zone;

a unit for receiving crude oil disposed within the portion of the well disposed in the zone and for distilling the oil therein;

means for generating steam within the unit and for injecting steam into the oil; and

means for delivering crude oil to the unit and means for recovering vapors from the unit.

13. A method of refining petroleum oil comprising the steps of:

injecting crude oil from the surface into a unit disposed in a pressurized, wet, geothermal zone having a temperature of at least 300° F.;

injecting geothermal steam from the zone into the oil contained in said unit;

distilling fractions from the oil in said unit; and

delivering the distilled vapors from the unit to surface.

4,248,307

LATCH ASSEMBLY AND METHOD

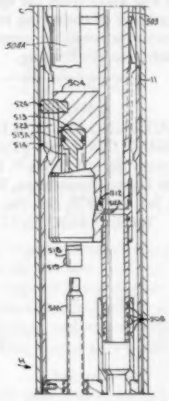
Raphael J. Silberman, Houston, Tex.; Frederick T. Tilton, La Habra, Calif.; Everett H. Smith, Houston, and Dennis A. Wichkoski, Pasadena, both of Tex., assignors to Baker International Corporation, Orange, Calif.

Filed May 7, 1979, Ser. No. 36,908

Int. Cl.[3] E21B *23/02*

U.S. Cl. 166—315 **14 Claims**

1. An apparatus carriable on a tubing string extendible into a subterranean well, said apparatus being selectively engageable between upper and lower sections of said tubing string, comprising: an outer housing and an inner body; latching means carried on one of said housing and said body for selectively securing said apparatus to said lower section; latch engaging means carried on said lower section and on the other of said housing and said body for selective co-engagement between said latching means and said one of said housing and said body; piston means on said housing and said body and having a piston head; first and second piston chambers between said piston head; control means removable from said apparatus to direct fluid pressure transmitted through said tubing string to said apparatus and having passageways to selectively provide a first fluid flow path within said control means and said apparatus to one of said upper and lower piston chambers to shift said housing and said body relative to one another to release said



latching means from said lower section, said control means having passageways selectively providing a second fluid flow path therethrough to the other of said upper and lower piston chambers to shift said housing and said body relative to one another to engage said latching means to said lower section.

4,248,308

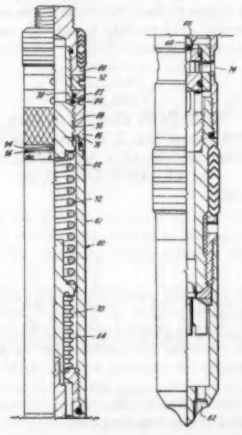
EXTERNALLY ADJUSTED SPRING ACTUATED WELL VALVE

Ronald E. Pringle, Houston, Tex., assignor to Camco, Incorporated, Houston, Tex.

Filed Apr. 27, 1979, Ser. No. 33,596

Int. Cl.[3] F04F *1/08*; E21B *43/12*

U.S. Cl. 166—322 **3 Claims**



1. In a valve for controlling fluid flow through a well tubing, the valve adapted to be positioned in the well tubing and having a housing and a valve closure member therein movable between open and closed positions, means for moving the valve member in a direction to open the valve, spring means acting against the opening force for moving the valve to the

closed position, the improvement of means of externally adjusting the spring closing force comprising,

shoulder means in the housing abutting the spring means,

adjusting means engaging in said shoulder means and extending outside of the housing for moving said shoulder means toward and away from the spring means for varying the closing force of the spring means, and

said adjusting means is rotatably connected but longitudinally fixed relative to the housing.

4,248,309

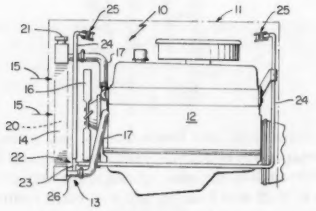
FIRE EXTINGUISHING SYSTEM UTILIZING THE ENGINE COOLING SYSTEM

Anatoli Hofle, Waynesville, and Doyle V. Haren, Clyde, both of N.C., assignors to Dayco Corporation, Dayton, Ohio

Filed Jul. 11, 1979, Ser. No. 56,566

Int. Cl.[3] **A62C** *35/12*

U.S. Cl. 169—47 **18 Claims**



1. In a fire extinguishing apparatus for an engine compartment of an engine driven vehicle in which said vehicle has an engine and a cooling system for said engine employing a cooling liquid under pressure, the improvement wherein said fire extinguishing apparatus comprises means operatively connected to said cooling system for employing said cooling liquid under pressure and automatically spraying said cooling liquid in said compartment in response to a fire therein, said means operatively connected to said engine cooling system comprises separate conduit means connected to said cooling system and receiving said cooling liquid under pressure therewithin, and separate spray means in flow communication with said conduit means for spraying said cooling liquid into said engine compartment in response to said fire.

4,248,310

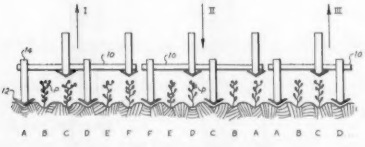
SKIP ROW CULTIVATORS

William R. McWilliams, Rte. 2, Box 46, Spur, Tex. 79370

Filed Jun. 28, 1979, Ser. No. 52,790

Int. Cl.[3] **A01B** *3/34, 15/00*

U.S. Cl. 172—661 **10 Claims**



8. In a skip row cultivator having:

a. an elongated horizontal tool bar,

b. at least one plow shank on the tool bar,

c. a plow on the bottom of each moveable shank; wherein the improvement comprises the following structure for moving plows into cultivating position:

d. a tool bar clamp attached to the tool bar in adjustable horizontal position,

e. a loop on the tool bar clamp,

f. said shank telescoped through the loop,

g. a shank clamp on the top of the shank, and

h. a hydraulic cylinder connecting the shank clamp and tool bar clamp.

4,248,311

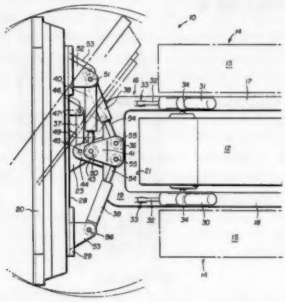
SIDE SHIFT BLADE ARRANGEMENT

Claude M. Frisbee, Bettendorf, and Rudolf Horsch, Davenport, both of Iowa, assignors to J. I. Case Company, Racine, Wis.

Filed Apr. 2, 1979, Ser. No. 26,111

Int. Cl.[3] **E02F** *3/76*

U.S. Cl. 172—819 **4 Claims**



1. In an earth-working vehicle, a frame comprising a generally C-shaped structure having opposed arms, the free ends of said arms being connected to said vehicle, the other ends of said arms being connected by a transverse cross-beam the improvement comprising:

a slide plate support, means for universally mounting said slide plate support on the forward end of said transverse cross-beam;

guide plate means slidably mounting a ground-engaging blade on said slide plate support to permit said blade to slidably move along the longitudinal extent of said slide plate support;

a vertical mast upstanding from said transverse cross-beam;

a pair of piston-cylinders connected at one of their ends to said vertical mast and their opposed ends being pivotally connected to respective sides of said slide plate support; and

a slider bar pivotally connected at one of its ends to said vertical mast and pivotally connected at its other end to said blade through an opening in said slide plate support, said slider bar forcing said blade to shift laterally on said slide plate support as said blade is angled.

4,248,312

METHOD AND APPARATUS FOR UPWARDLY CUTTING FULL CUTTING FACE OF A SHAFT WITHOUT REQUESTING WORKMEN'S HANDS

Takayuki Jinno; Yasuo Kotake, and Toshihiro Kikuchi, all of Ohdate, Japan, assignors to Dowa Mining Co., Ltd. and Koken Boring Machine Co., Ltd., both of Tokyo, Japan

Filed Apr. 10, 1978, Ser. No. 895,103

Claims priority, application Japan, Apr. 28, 1977, 52/49510; May 31, 1977, 52/63643

Int. Cl.[3] **E21D** *3/00*

U.S. Cl. 175—57 **9 Claims**

1. A method for upwardly forming and excavating a shaft through destructible underground rock, said method comprising:

(a) providing a vertically movable rod thrusting means adapted to support an upwardly extending series of drill rods having at the upper end thereof a rotary bit;

(b) providing a vertically movable frame segment thrusting

means adapted to support an upwardly extending series of cylindrical frame segments surrounding said series of rods;

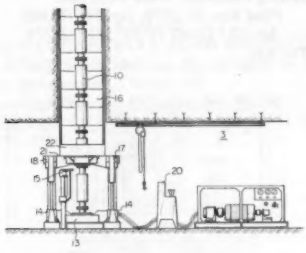
(c) moving said rod thrusting means upwardly, thus moving said series of rods and said rotary bit upwardly into destructible rock, while rotating said series of rods and said rotary bit, and thereby cutting in said rock the full face of a shaft for a length portion thereof;

(d) moving said frame segment thrusting means upwardly, independent of the movement of said rod thrusting means, thus moving said series of frame segments upwardly into said length portion of said shaft, and thereby supporting the side wall of said shaft throughout the majority of the length thereof;

(e) interrupting rotation of said series of rods and said rotary bit;

(f) operating a rod holder supported by said frame segment thrusting means to hold said series of rods and to prevent vertical movement thereof;

(g) detaching said rod thrusting means from said series of rods and lowering said rod thrusting means;



(h) adding a new rod to said rod thrusting means, and attaching said new rod to said series of rods, to thereby form a lengthened series of rods supported by said rod thrusting means and held by said rod holder;

(i) releasing said rod holder from said lengthened series or rods;

(j) holding said series of frame segments to prevent vertical movement thereof by a frame segment holder positioned exteriorly of said series of frame segments;

(k) detaching said frame segment thrusting means from said series of frame segments and lowering said frame segment thrusting means;

(l) fabricating a new frame segment on said frame segment thrusting means, and attaching said new frame segment to said series of frame segments, to thereby form a lengthened series of frame segments supported by said frame segment thrusting means; and

(m) repeating said steps (c) through (l) until said shaft is formed to a desired height and then terminating the forming and excavating operation.

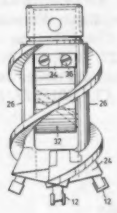
4,248,313

EARTH BORING AUGER

Aaron Bonca, 17 Sedgemount Dr., Scarborough, Ontario, Canada (M1H 1X2)

Filed Aug. 2, 1979, Ser. No. 62,919
Int. Cl.[3] E21B *25/02*
U.S. Cl. 175—239 **7 Claims**

1. An auger bit for earth boring with a hollow stem auger, said bit having a cage structure formed by spaced concentric upper and lower rings, said upper ring forming a coupling to the remainder of the auger and said lower ring having a plurality of outward projections, side members extending parallel to the axis of the bit directly between said upper and lower rings radially outward of the inner diameters of the rings so as to define therebetween a cavity having spaced plane parallel side walls, and flight members extending helically between said rings externally of both said side members and said rings, cutting teeth releasably anchored in said outward projections from said lower ring, and a pair of valve members extending from said upper ring within said cage structure, said valve



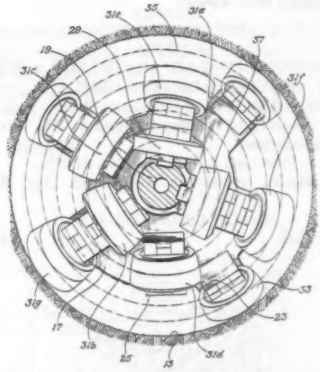
members being spring urged to assume a cusp-like formation in which they co-act with the side walls to close the central orifice of said upper ring and being displaceable between said side walls to permit passage of a cylindrical member through and between the orifices in said upper and lower rings.

4,248,314

SHAFT DRILL BIT WITH OVERLAPPING CUTTER ARRANGEMENT

Robert A. Cunningham, Bellaire, and Rudolph C. O. Pessier, West University Place, both of Tex., assignors to Hughes Tool Company, Houston, Tex.

Filed May 29, 1979, Ser. No. 43,532
Int. Cl.[3] E21B *10/12, 10/16, 10/22, 10/28*
U.S. Cl. 175—344 **8 Claims**



1. An earth boring drill bit, comprising in combination:

a cutter support member adapted to be connected to a string of drill pipe for imparting rotary drive to the cutter support member;

at least one inner cutter rotatably mounted to the cutter support member adjacent the center for disintegrating the earth formation face in the vicinity of the center;

a plurality of gage cutters rotatably mounted at the periphery of the cutter support member for disintegrating the earth formation face in the gage vicinity; and

a plurality of intermediate cutters rotatably mounted to the cutter support member between the inner cutter and the gage cutters at regular intervals, the intermediate cutters each having a plurality of rows of inserts for disintegrating the earth formation face in the vicinity between the center and the gage areas; each intermediate cutter being positioned so that it overlaps one-half of the next outward intermediate cutter;

the intermediate cutters being offset so that the rows of

inserts of an overlapping cutter contact the earth between the points where the rows of the inserts of the overlapped cutter contact.

4,248,315

WEIGHING DEVICE AND INSTALLATION FOR VOLUMETRIC ANALYSIS OF A SAMPLE

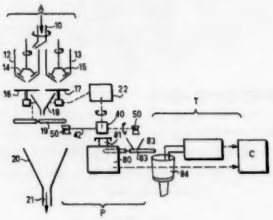
Charles Falinower, Montelimar, France, assignor to Ciments Lafarge France, Saint Cloud, France

Filed Jun. 27, 1979, Ser. No. 52,680

Claims priority, application France, Jun. 27, 1978, 78 19089

Int. Cl.³ G01G *13/14*

U.S. Cl. 177—50 **11 Claims**



1. A weighing device to measure the weight of a sample of powder, supplied by a suitable feed-mechanism, characterized by the fact that it comprises at least one sample-holder vessel and a taring vessel, connected to a transfer mechanism which moves the sample-holder vessel from a filling position where it is directly under the feed-mechanism to receive the sample, to an emptying position, and which also sets the taring vessel and the vessel containing the sample on a weighing mechanism in turn, to measure their weight.

4,248,316

ERROR DETECTING APPARATUS FOR A SCALE HAVING A DIGITAL DISPLAY

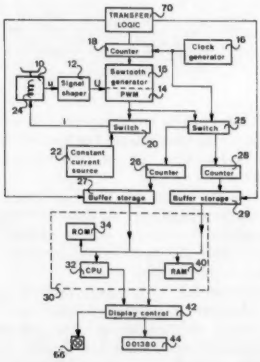
Felix Strobel, Greifensee, and Willi Kunz, Zurich, both of Switzerland, assignors to Mettler Instruments AG, Greifensee-Zurich, Switzerland

Filed Oct. 5, 1979, Ser. No. 82,279

Claims priority, application Switzerland, Apr. 4, 1979, 3119/79

Int. Cl.³ G01G *19/52, 3/14*

U.S. Cl. 177—50 **5 Claims**



1. In a scale for weighing a load, said scale having clock signal generator means, first counting means connected to said clock signal generator means for counting said clock signals and furnishing a sequence of timing signals each signifying the start of a predetermined time interval comprising a predetermined number of clock signals, second counting means for counting said clock signals during a weight-dependent part of at least one of said predetermined time intervals and furnishing a weight signal corresponding to the so-counted number of clock signals, and means for storing said weight signal and furnishing a digital display thereof, an error detecting system comprising

means connected to said clock signal generator means and said second counting means for adding the number of pulses generated in the remainder of said at least one predetermined time interval to said weight signal, thereby creating a sum signal, and for comparing said sum signal to a reference signal corresponding to said predetermined number of clock signals in said predetermined time interval; and

means for furnishing an error signal when said sum signal is unequal to said reference signal.

4,248,317

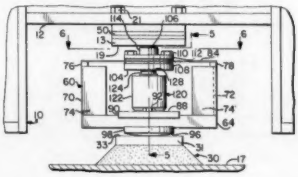
LOAD CELL APPARATUS

Amir Rahav, King of Prussia, Pa., assignor to Cardinal Scale Manufacturing Company, Webb City, Mo.

Filed Sep. 10, 1979, Ser. No. 73,693

Int. Cl.³ G01G *19/02, 3/14, 21/24*

U.S. Cl. 177—134 **15 Claims**



1. In a load weighing scale:

fixed support structure having an upwardly facing load bearing portion;

shiftable weighbridge structure having a downwardly facing load transmitting portion in generally vertically spaced, opposing relationship to said load transmitting portion of said support structure;

a shiftable carrier assembly disposed between said portions of said structures and including a lower, generally horizontal, rigid plate, an upper, generally horizontal, primarily generally vertically yieldable, flexure plate, and means secured to said rigid plate and connected with spaced, marginal sections of said flexure plate for holding said flexure plate in generally vertically spaced, opposing relationship with said rigid plate and above the latter,

said rigid plate having an upwardly facing, load bearing area and a downwardly facing, load transmitting zone in generally vertically spaced, opposing relationship with said load bearing portion of said support structure and above the latter,

said flexure plate having an upwardly facing, load bearing zone in generally vertically spaced, opposing relationship with said load transmitting portion of said weighbridge structure and below the latter, and a downwardly facing, load transmitting area in generally vertically spaced, opposing relationship with said load bearing area of said rigid plate and above the latter;

upwardly facing means on said load bearing zone of said flexure plate and above the latter for effecting a rolling contact and relatively rotatable engagement type coupling with a downwardly facing surface of said load transmitting portion of said weighbridge structure;

downwardly facing means on said load transmitting zone of said rigid plate and below the latter for effecting a rolling contact and relatively rotatable engagement type coupling

with an upwardly facing surface of said load bearing portion of said support structure;

a force transducing, load cell unit disposed between said areas of said plates and including a lower, base element and an upper, primarily generally vertically shiftable, force responsive element,

said force responsive element having a load bearing part in generally vertically spaced, opposing relationship with said load transmitting area of said flexure plate and below the latter,

said base element having a load transmitting part in generally vertically opposing relationship with said load bearing area of said rigid plate and above the latter;

upwardly facing means on said load bearing part of said force responsive element and above the latter for effecting a rolling contact and relatively rotatable engagement type coupling with a downwardly facing surface of said load transmitting area of said flexure plate; and

downwardly facing means on said load transmitting part of said base element for effecting an engagement type coupling with an upwardly facing surface of said load bearing area of said rigid plate.

4,248,318

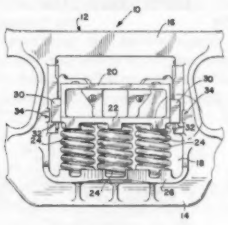
RAILWAY CAR TRUCK LOAD INDICATOR

Gerald D. O'Neil, South Holland, Ill., assignor to AMSTED Industries Incorporated, Chicago, Ill.

Filed Nov. 29, 1979, Ser. No. 98,703

Int. Cl.³ B61F *5/06, 5/52;* **G01N** *5/00;* **G01G** *19/08*

U.S. Cl. 177—137 **1 Claim**



1. A railway car truck load indicating arrangement including a truck side frame, spring sets carried by said side frame, a bolster having an end portion seated on said spring sets,

a bolster jib having a lower edge providing a bolster loading reference,

and a projection from the side frame having spaced upper and lower edges providing corresponding side frame references,

said bolster reference when below the upper edge of the side frame reference, when the railway car is empty, indicating malfunctioning spring sets,

and said bolster reference when below the lower edge of the side frame reference, when the railway car is loaded, indicating malfunctioning spring sets.

4,248,319

CIRCUIT ARRANGEMENT FOR CONNECTING AT LEAST TWO TELEPRINTERS TO A COMMON CONNECTION LINE

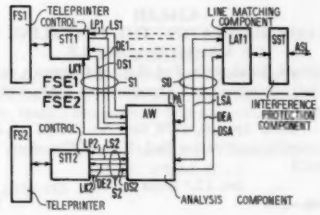
Alfred Bachner, Groebenzell, and Herbert Vogl, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 31, 1979, Ser. No. 44,059

Int. Cl.³ H04L *15/00*

U.S. Cl. 178—3 **8 Claims**

1. Circuit arrangement for connecting one of at least two teleprinters to a common connection line, comprising line matching means for evaluating the changes in state which occur on said connection line in the incoming direction, means for control associated with each teleprinter and adapted to generate selected call criteria, means for analysis connected in the direction leading toward said connection line, each of said means for control being connected via interface lines to said means for analysis which is connected in the direction leading toward said connection line via further interface lines to said line matching means, said line matching means including means for producing specific criteria in response to states sensed on the common connection line, and for transmitting



said criteria to said means for analysis and further including means for producing changes in state on the connection line in the outgoing direction, said means for analysis including evaluation switching means for evaluating call criteria which are transmitted from said means for control and from said line matching means, for evaluating a clearing criterion received from said connection line, and for evaluating a teleprinter selection criterion, said means for analysis also including switching means which serve to switch through said interface lines and timing means which serves to form monitoring times.

4,248,320

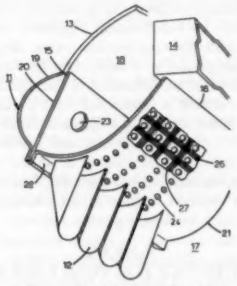
AIR CUSHION VEHICLE FLEXIBLE SKIRTS

Raymond L. Wheeler, Cowes, England, assignor to British Hovercraft Corporation Limited, Yeovil, England

Continuation-in-part of Ser. No. 840,860, Oct. 11, 1977, abandoned. This application Jun. 21, 1979, Ser. No. 50,609

Int. Cl.³ B60V *1/16*

U.S. Cl. 180—128 **8 Claims**



7. An air cushion vehicle having cushion containing means including a flexible skirt comprising an inflatable bag member, said bag member comprising flexible impermeable sheet having fabric reinforcing therein, said bag member being attached to vehicle hard structure along spaced fixing lines, one of said fixing lines being disposed outboard with respect the vehicle cushion area, a portion of said bag member extending downwardly from the inner fixing line being apertured whereby the space enclosed by the bag member and the vehicle hard structure is in communication with the vehicle cushion area, said fabric in said portion of the bag member having substantial spacings between groups of warp and weft cords and elasto-

meric material surrounding the groups of cords and embedded in the interstices therebetween, the apertures formed in the elastomeric material within the spacings between the groups of warp and weft cords so that the continuity of the warp and weft cords surrounding the aperture is maintained and wherein there are from 2 to 10 cords per group with said groups of warp and weft threads being interwoven where they cross each other, and said apertures are spaced from each other at a pitch centre dimension that is at least 50% larger than the width dimension of each said aperture.

4,248,321

DEVICE FOR REGULATING THE TRAVELING SPEED OF A MOTOR VEHICLE

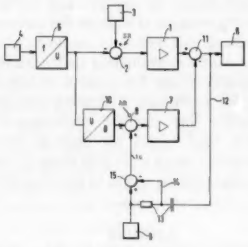
Harald Collonia, Königstein, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 10, 1979, Ser. No. 28,812

Claims priority, application Fed. Rep. of Germany, Apr. 17, 1978, 2816613

Int. Cl.³ B60K *27/00*

U.S. Cl. 180—179 **3 Claims**



1. A device for regulating the traveling speed of a motor vehicle by means of an electric speed regulator which compares the prevailing actual speed with a desired set speed and in the case of a deviation transmits a signal depending on the value of the deviation to a correcting element which controls the fuel air mixture supplied to the vehicle engine, including means which produce, upon a modification of the set speed, a delayed modification of the signal transmitted to the correcting element, wherein an acceleration regulator transmits to the correcting element an acceleration value depending on the actual speed change and an acceleration set value, and a delay means for the delayed modification of the signal transmitted to the correcting element is connected with acceleration regulator, said delay means including a high pass filter whose input in connected to the correcting element and whose output is connected to the acceleration regulator in such a way that at the occurrence of a signal that increases the fuel air mixture, the acceleration set value at the correcting element is reduced.

4,248,322

SECURITY DEVICE FOR FUEL TANK CAP OF A TWO-WHEELED VEHICLE

Christian Jaulmes, Paris, France, assignor to Ateliers de la Motobecane, Pantin, France

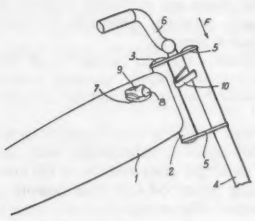
Filed May 18, 1979, Ser. No. 40,225

Claims priority, application France, Sep. 5, 1978, 78 25479

Int. Cl.³ B60R *25/00*; B62H *5/00*

U.S. Cl. 180—287 **6 Claims**

1. A security device for a fuel tank of a two-wheeled vehicle having a front fork which can be locked in a position where it forms an angle with respect to the longitudinal plane of symmetry of the vehicle, the device comprising a fuel tank cap provided with at least one notch which extends from its upper surface to a surface thereof below said upper surface and distinct from periphery surfaces of the cap, and an elongated member fixed to and immoveable with respect to said fork, and positioned with respect to said cap and its said upper surface so



that when said fork is in its locked position said member which is immoveable with respect to said fork is in said notch.

4,248,323

ELECTRIC VEHICLE WITH DISPLACEABLE BATTERY PACK

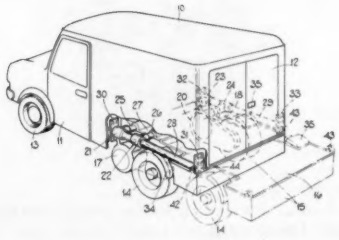
Edward N. Gaffney, West Midlands, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Apr. 17, 1978, Ser. No. 896,957

Claims priority, application United Kingdom, Apr. 22, 1977, 16771/77

Int. Cl.³ B62D *25/08*

U.S. Cl. 180—291 **4 Claims**



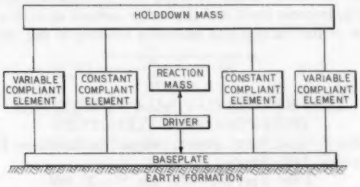
1. A vehicle comprising a main body portion provided with a first pair of ground-engaging wheels, and also comprising a frame which carries at least one additional pair of ground-engaging wheels, power supply means including a battery pack, and transmission means connecting the power supply means to at least one wheel of said additional pair of ground-engaging wheels for driving the vehicle, the frame being connected to the main body portion by slide means which include bar means extending longitudinally of the vehicle and bearing means fitted on the bar means and slidable thereon, thereby permitting the frame to move relative to the main body portion so that the frame may occupy a closed position on the slide means in which the power supply means and the transmission means are enclosed within the vehicle and an extended position on the slide means in which the power supply means and the transmission means are accessible from outside the vehicle, said frame being movable on the slide means from one position to the other by maintaining the main body portion stationary and actuating the power supply means to drive the frame forwards or backwards along the slide means relative to the main body portion, and the vehicle further comprising releasable locking means for locking the frame to the main body portion when the frame is in its closed position and stop means preventing the frame from moving on the slide means beyond the extended position.

4,248,324

SEISMIC VIBRATOR AND METHOD FOR IMPROVING THE OUTPUT OF A SEISMIC VIBRATOR

Joseph F. Mifsud, Houston, Tex., assignor to Exxon Production Research Company, Houston, Tex.

Filed Feb. 7, 1979, Ser. No. 10,117
Int. Cl.[3] G01V 1/133
U.S. Cl. 181—121 15 Claims



1. An apparatus for controlling the vibrations of a seismic vibrator having a holddown mass and a baseplate, said apparatus comprising:

at least one compliant element connected to the holddown mass and to the baseplate, said compliant element having a variable stiffness;

control means connected to the compliant element for varying the stiffness of the compliant element, said control means being responsive to an input signal;

at least one sensor for measuring the frequency of the baseplate vibrations, said sensor generating a signal indicative of said frequency; and

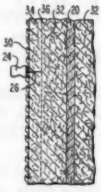
means for transmitting the sensor signal to the control means, whereby the stiffness of the compliant element between the holddown mass and the baseplate is controlled according to the frequency of the baseplate vibrations.

4,248,325

TACKABLE SOUND ABSORPTIVE PANEL

George Georgopoulos, Churchill Borough, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 28, 1978, Ser. No. 973,990
Int. Cl.[3] E04B 1/82
U.S. Cl. 181—284 10 Claims



1. A sound absorptive tackable space dividing wall panel for receiving tacks and the like comprising:

a frame;

a rigid central support member dividing said wall panel into two sides and bounded by said frame;

first sound absorptive layers on each side of said central support member;

a wire mesh screen covering the outer surface of each of said first sound absorptive layers;

a second sound absorptive layer covering the outer surface of each of said wire mesh screens; and

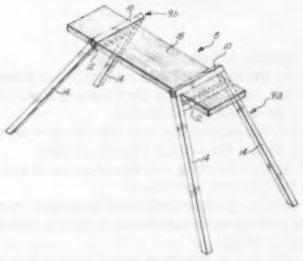
a cover cloth covering each of said second sound absorptive layers and forming the surfaces of said sound absorptive tackable wall panel, the combined thickness of said second sound absorptive layer and adjacent cover cloth being less than the length of the pin portions of said tacks and the like intended for use therewith.

4,248,326

PORTABLE, BOARD-GRIPPING PLATFORM SUPPORT

W. Robert Hansen, and George C. Christensen, both of Friday Harbor, Wash., assignors to Porta Horse, Inc., Friday Harbor, Wash.

Filed Jul. 31, 1978, Ser. No. 929,799
Int. Cl.[3] F16M 11/00
U.S. Cl. 182—185 5 Claims



1. A support for bracing one end of a horizontally-extending board used for creating a horse, said board having a width and a thickness, said support comprising:

two spaced-apart, elongate, outwardly symmetrical leg members, each leg member having a top and bottom, the leg members arranged so as to form a plane wherein said leg members diverge away from each other from their tops by an angle α, wherein said angle α is between 10° and 90°;

a first bar member having first and second substantially planar surfaces and rigidly connected to the tops of said leg members, the span between said leg members at said first surface being greater than the width of said board, said first surface being oriented substantially orthogonal to said plane defined by said leg members and facing said bottom of said leg members, said second surface forming a first edge with said first surface; and

a second bar member having third and fourth substantially planar surfaces and rigidly connected to said leg members, said third surface being substantially parallel with, opposed and spaced apart from said first surface, said fourth surface forming a second edge with said third surface, said second edge being spaced substantially from said first edge in a direction transverse to said plane defined by said leg members, said spacing between said first and third surfaces being substantially greater than the thickness of said board and being within a range which allows said first and second edges to contact said board when said board is inserted between said first and third surfaces and forms an obtuse angle β with said plane, wherein said angle β is between 102° and 140°, said first and second edges being capable of forming indentations in said board when said board is angled from said plane by angle β and a downward force is applied to said board.

4,248,327

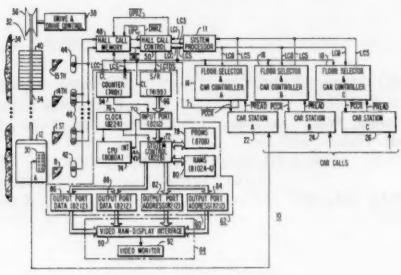
ELEVATOR SYSTEM

Alan F. Mandel, Pittsburgh, Pa.; Louis M. Capuano, Westfield, N.J.; Paul R. Otto, Santa Ana, Calif., and Kenneth M. Eichler, North Versailles, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 19, 1979, Ser. No. 21,655

Int. Cl.[3] B66B *3/00*

U.S. Cl. 187—29 R **6 Claims**



1. An elevator system, comprising:

a building having a plurality of floors and hoistway means,

an elevator car mounted in the hoistway means of said building to serve the floors therein,

call means for registering calls for elevator service,

memory means for storing registered calls,

control means directing said elevator car to serve registered calls for elevator service,

means removing registered calls from said memory means when said elevator car serves a call for elevator service, and display means,

said display means including signal preparation means which provides output signals responsive to the registered calls stored in said memory means,

said display means further including visual means responsive to the output signals from said signal preparation means for visually displaying at least certain of the registered calls stored in said memory means one at a time, in a predetermined timed sequence, at a first common display location, such that each call in the predetermined sequence is displayed at the same location as the previous call in the sequence.

4,248,328

SLIDING CALIPER DISC BRAKE

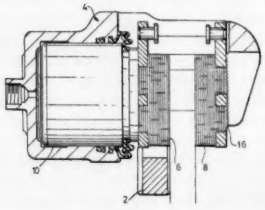
Horst W. Klassen, St. Sebastian, Fed. Rep. of Germany, assignor to Girling Limited, Birmingham, England

Filed May 14, 1979, Ser. No. 38,822

Claims priority, application United Kingdom, May 24, 1978, 21987/78

Int. Cl.[3] F16D *65/00*

U.S. Cl. 188—73.3 **9 Claims**



1. A sliding caliper disc brake comprising a torque member, a caliper and a pair of friction pad assemblies, at least one hydraulic actuator being incorporated in the caliper, the caliper being attached to the torque member for sliding movement relative thereto and being arranged to act on the friction pad assemblies, mutually abutting surfaces of the caliper and a friction pad assembly being such that one of the surfaces is roughened while the other of the surfaces is formed of a material which is relatively soft in relation to the said one of said surfaces, whereby under braking the roughened surface is caused to impress itself into the softer surface so as to restrain rotation of the friction pad assembly relative to the caliper.

4,248,329

DISC BRAKES HAVING AN IMPROVED DUST-PROOFING STRUCTURE

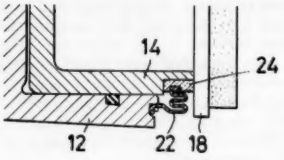
Masahiko Torigoe, Itami, Japan, assignor to Sumitomo Electric Industries, Ltd., Japan

Filed Apr. 26, 1979, Ser. No. 33,409

Claims priority, application Japan, May 23, 1978, 53-61881

Int. Cl.[3] F16D *65/00;* **F16J** *15/52*

U.S. Cl. 188—264 G **6 Claims**



1. In a disc brake comprising a caliper, a pair of brake pads, a pair of backing plates, at least one piston carried by said caliper and slidably mounted in a cylinder for bringing one or both of said brake pads into engagement with the opposite surfaces of a rotor to be braked and dust guard means for keeping out dust from the cylinder bore, the improvement wherein there is provided a thermoinsulating member which is positioned between and in direct communication with said piston and dust guard means, to retard the deterioration of said dust guard means due to heat generated by operation of said brake.

4,248,330

CONTROL SYSTEM TO APPLY VEHICLE BRAKES DURING A TRANSMISSION DIRECTIONAL SHIFT

Sidney J. Audiffred, Jr., Washington, and David S. Ohaver, Canton, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Continuation-in-part of Ser. No. 566,501, Apr. 9, 1975, abandoned. This application May 18, 1977, Ser. No. 798,054

Int. Cl.[2] B60K *29/02*

U.S. Cl. 192—4 C **6 Claims**

1. In a vehicle having forward and reverse drive through a transmission including hydraulically actuated forward and reverse clutches, a transmission control system responsive to directional shifts of said hydraulically actuated forward and reverse clutches to provide a modulated pressure signal, and hydraulically release brakes, the combination comprising;

a first source of pressurized hydraulic fluid;

speed sensing means for generating a first pressure signal in response and proportional to the output from said transmission;

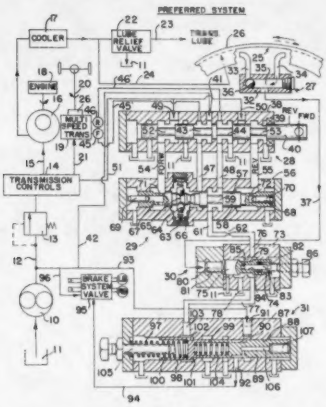
means for applying said brakes;

directional selector valve means communicating with said first source of pressurized hydraulic fluid and said transmission and shiftable to forward and reverse positions for respectively selectively directing pressurized hydraulic fluid from said first source of pressurized hydraulic fluid to either one of said forward or reverse clutches and to the means for applying said brakes and simultaneosly commu-

nicating said transmission control system modulated pressure signal to said means for applying said brakes;

said means for applying said brakes comprising sequence valve means, dump valve means, and reducing valve means;

said sequence valve means communicating with said directional selector valve means and responsive to said modulated pressure signal for controlling communication of pressurized hydraulic fluid to the dump valve means from the directional selector valve means;



said dump valve means interposed between said sequence valve and said reducing valve means and responsive to said first pressure signal for controlling communication of pressurized hydraulic fluid from said sequence valve means to said reducing valve means; and

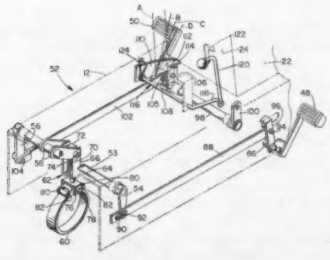
said reducing valve means variably responsive to pressurized hydraulic fluid received from said dump valve means for communicating variable hydraulic fluid pressure from said first source of pressurized hydraulic fluid to said brakes for controlling the release of said brakes.

4,248,331

CLUTCH-BRAKE CONTROLS FOR A LAWN AND GARDEN TRACTOR

Robert N. Behrens, Horicon, Wis., assignor to Deere & Company, Moline, Ill.

Filed Mar. 16, 1979, Ser. No. 21,056
Int. Cl.³ B60K *41/24*
U.S. Cl. 192—13 R **4 Claims**



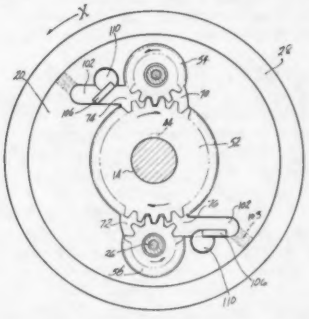
1. A clutch and brake control for a traction drive transmission, comprising: a support frame; a clutch control shaft and a brake control shaft disposed parallel to each other and respectively rotatably supported by the frame; a clutch-brake pedal fixed to one end of the clutch control shaft; a crank arm fixed to the clutch control shaft and adapted for connecton to a traction drive clutching mechanism operative for effecting disengagement of the traction drive in response to the clutch-brake pedal being depressed through an initial range; a first motion transfer link means connecting the clutch control shaft to the brake control shaft; a brake pedal pivotally connected to the frame; a second motion transfer link means connecting the brake pedal to the brake control shaft; a normally disengaged brake element adapted for selective engagement with a rotating traction drive element; brake actuator link means coupling the brake control shaft to the brake element for effecting engagement of the latter in response to rotation of the brake control shaft; said first motion transfer link means including a first lost motion connection means which acts to transfer motion for rotating the brake control shaft only after the clutch-brake pedal is depressed to a brake-engage position beyond said initial range and which acts to prevent rotation of the brake control shaft, as effected by the brake pedal, from being transferred to the clutch-brake pedal; and said second motion transfer link means including a second lost motion connection means acting to transfer motion from the brake pedal to the brake control shaft but not vice-versa.

4,248,332

FLUID GEAR COUPLING

Wilfred C. Noyes, Rte. 1, Box 298A, Newberg, Oreg. 97132

Filed Apr. 23, 1979, Ser. No. 32,146
Int. Cl.³ F16D *31/04, 43/24*
U.S. Cl. 192—61 **10 Claims**

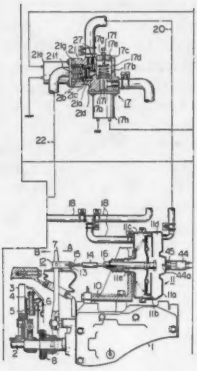


1. A fluid coupling comprising a rotatable coupling housing, a drive shaft, a rotary fluid pump means within said housing connected to and rotatable with said drive shaft, a fluid inlet to and a fluid outlet from said housing in fluid circuit with said pump means whereby rotation of said pump means is effective to pump fluid from said inlet to said outlet, a driven shaft, one of said shafts being connected to and rotatably moveable with said housing, valve means associated with said fluid outlet and associated with and rotatably moveable with said drive shaft, said valve means being responsive to the speed of rotation of said drive shaft to move to block said fluid outlet thereby restricting the flow of pumped fluid so as to transmit power from said drive shaft to said driven shaft, and said valve means being further responsive to the pressure of said pumped fluid to move to unblock said fluid outlet.

4,248,333
VEHICLE TRANSMISSION WITH AN AUTOMATIC CLUTCH

Toshinori Matsumoto, Yokohama, and Tamio Kawamoto, Sagamihara, both of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Apr. 5, 1977, Ser. No. 784,857
Claims priority, application Japan, Apr. 7, 1976, 51/38213
Int. Cl.[2] F16D 47/00
U.S. Cl. 192—0.052 2 Claims



1. In an automobile having an accelerator (**36**); a gear shift lever (**19**) and a friction clutch having a driving element (**3**), a driven element (**4**) and yieldable means (**6**) for forcing said elements into contact with each other to effect an engagement of the clutch,

a clutch control system comprising:

a clutch actuator means (**11**) for operating said clutch including a pressure differential operated motor having a power element (**11***e*) operably connected to one of said elements of said clutch and a vacuum chamber (**11***d*);

a source of vacuum (**26**);

a clutch control valve assembly including a control chamber (**17***c*), a clutch release valve means (**21**) for establishing an air flow communication between said vacuum chamber and said source of vacuum when a solenoid thereof (**21***e*) is energized and for establishing an air flow communication between said vacuum chamber and said control chamber when said solenoid thereof is not energized, and an air-on valve means (**17**) for establishing an unrestricted air flow communication between said control chamber and the ambient atmosphere when a solenoid thereof (**17***h*) is energized;

said clutch control valve assembly further including an accelerator actuated valve means (**30**) for establishing a restricted air flow communication between said control chamber and the ambient atmosphere, said accelerator actuated valve means opening an effective flow area thereof in response to depression degree of said accelerator above a predetermined level; and

a control circuit means for energizing said solenoids of said clutch control valve assembly, said control circuit means including

a relay (**40**) including a relay coil (**40***a*) and a normally open relay switch connected in series with said solenoid (**21***e*) of said clutch release valve means (**21**), said normally open relay switch being closed upon energization of said relay coil;

a throttle position responsive switch means (**39**) connected in series with said relay coil, said throttle responsive switch means being closed when a throttle valve opening is smaller than a predetermined level and being open when the throttle valve opening is larger than the predetermined level thereof;

a shift switch (**42**) connected in series with said throttle position responsive switch means, said shift switch being closed upon manipulation of said gear shift lever;

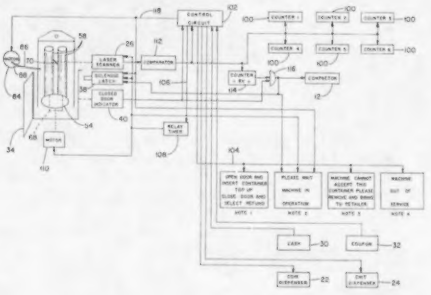
a vehicle speed responsive switch (**47***c*) connected in series with said throttle position responsive switch means, said vehicle speed responsive switch being closed when the vehicle speed is lower than a predetermined level and being open when the vehicle speed is higher than the predetermined level thereof; and

an actuator condition responsive switch (**44**) connected in series with said solenoid (**17***h*) of said air-on valve (**17**), said actuator condition responsive switch being normally open and closed when said elements (**3,4**) of said clutch are disengaged from each other.

4,248,334
RECYCLING APPARATUS

C. John Hanley, Fords, N.J., and Frank Morris, Yardley, Pa., assignors to PepsiCo Inc., Purchase, N.Y.

Filed Mar. 13, 1978, Ser. No. 886,333
Int. Cl.[3] G07F 7/06
U.S. Cl. 194—4 C 5 Claims



1. Recycling apparatus for accepting the return of selected types of containers and for compensating a returnor for the deposit therein of one of the selected types, comprising:

a. a depository means for receiving containers from a returnor, a lockable container infeed door for said depository means, means for rotating a container within said depository means to enable scanning of code markings on said container, including a substantially horizontal turntable in said depository means slightly inclined from the horizontal, and at least one substantially vertically extending roller positioned in the depository means proximate the periphery of the turntable and adapted to have a container tilted thereagainst, said turntable and roller being rotated in unison so as to impart rotation to a container inserted in the depository means and supported on said turntable;

b. scanning means for scanning code markings on a container, placed in the depository means, determinative of said selected container type;

c. control means responsive to the output of said scanning means for selectively accepting or rejecting a container predicated on the output of said scanning means, said control means including means for causing said lockable door to be latched during said scanning cycle, and means for causing said turntable to rotate a number of revolutions to facilitate said scanner means to at least once scan the code markings on the container;

d. dispensing means responsive to the output of said control means for dispensing selective types of compensation to the returnor upon acceptance of a returned container; and

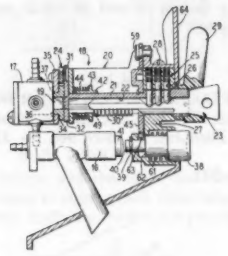
e. a receptacle in said apparatus for receiving and accumulating accepted containers.

4,248,335

KEY-OPERATED ACTUATOR

Richard T. Cornelius, deceased, late of Minnetonka, Minn., and Richard G. Lareau, executor, St. Paul, Minn., assignors to McQuay-Perfex Inc., Minneapolis, Minn.

Filed Jan. 25, 1979, Ser. No. 6,344
Int. Cl.[3] G07F 7/02
U.S. Cl. 194—4 D 19 Claims



1. An acutator adapted to be operated by a key having at least one frangible portion, said actuator comprising:

(a) a frame;

(b) an elongated bolt supported on said frame for angular movement, said bolt having a key-slot therein receptive at one end of the key with its frangible portion projecting therefrom, its other end being adapted to actuate a device;

(c) a tumbler mechanism on said frame and slidably projecting into said key slot in the absence of the key to prevent angular movement of said bolt, and retractible therefrom by the key;

(d) an axially-biased sleeve slidable on said bolt in response to being engaged by the frangible portion of the key, said sleeve having a radially projecting portion engageable with said frame to preclude sleeve rotation, said sleeve having an anvil surface normally angularly displaced from the key-slot for breaking off the frangible portion of the key during angular movement of said bolt;

(e) a control disc co-rotatably secured to said bolt; and

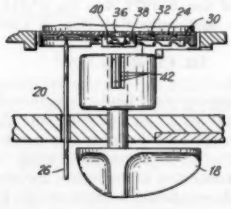
(f) an abutment on said control disc engageable with said radially projecting portion of said angularly fixed sleeve to thereby prevent rocking of said bolt, said sleeve being displaceable out of the angular path of said abutment by the presence of at least one such frangible key portion on the key.

4,248,336

PROTECTIVE SHIELD FOR A PARKING METER WINDING RING

William Fiedler, 58-29 69th La., Maspeth, N.Y. 11378

Filed Apr. 30, 1979, Ser. No. 35,027
Int. Cl.[3] G07F 17/24
U.S. Cl. 194—97 R 5 Claims



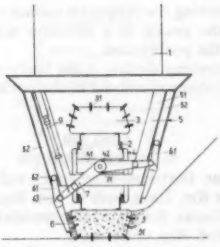
1. A parking meter mechanism for use in a parking meter having a time indicating display, a winding knob, a housing defining a coin opening and an annular winding ring whose motion actuates a timing mechanism for causing a time indication to be shown by said display, comprising an annular protective shield coaxial and proximate to said winding ring and covering most of the area of said winding ring, means for holding said shield in its position with respect to said winding ring and low friction means positioned between said shield and said winding ring, all adapted and arranged such that attempted tampering with said mechanism for the purpose of moving said winding ring results in contact with said shield, moving said shield to a position abutting said winding ring and slidable motion of said shield relative to said winding ring.

4,248,337

EQUIPMENT FOR HANDLING BULK MATERIAL

Karl E. Zimmer, Eiweiler, Fed. Rep. of Germany, assignor to Pohlig-Heckel-Bleichert Vereinigte Maschinenfabriken, Fed. Rep. of Germany

Filed Dec. 7, 1978, Ser. No. 967,405
Claims priority, application Fed. Rep. of Germany, Dec. 17, 1977, 2756312
Int. Cl.[3] B65G 65/06
U.S. Cl. 198—301 9 Claims



1. Apparatus for handling bulk material at controlled rates, comprising a bridge which extends in a first horizontal direction and is movable in a second substantially perpendicular horizontal direction; a scraper conveyor carried by said bridge and including an endless scraper chain having an upper and lower course and a series of scraper flights connected thereto in spaced relationship along the length thereof, first drive means adapted to drive said scraper conveyor toward one end at a selected rate of speed, said scraper conveyor being operable to move bulk material towards said one end thereof by means of said scraper flights; mutually opposite confining wall elements disposed on opposite sides of said lower course of said scraper chain, mounting means connecting said confining walls to said bridge and permitting guided vertical movement of said confining walls relative to said bridge, and actuating means operable to lift and lower said confining walls a roller bed extending under said one end of said scraper conveyor substantially perpendicularly thereof and connected to said bridge to move therewith; an endless conveyor belt supported by and overlying said roller bed having an upper course which extends under said one end of said scraper conveyor and adapted to receive bulk material which has been delivered by said scraper conveyor at said one end thereof; a conveyor-type weigher adapted to indicate the weight of bulk material lying on said upper course of said conveyor belt in a predetermined area thereof, said weigher being spaced in said second direction from said one end of said scraper conveyor; second drive means operably connected to said conveyor and belt adapted to drive said upper course thereof in said second direction from said one end of said scraper conveyor toward and beyond said predetermined area at a selected rate of speed.

4,248,338

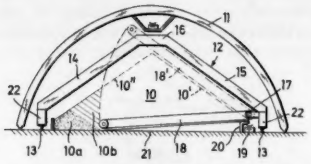
ROTATOR FOR INSPECTING CONTAINERS

Leon E. Thompson, Butler, Pa., assignor to American Glass Research, Inc., Butler, Pa.

Filed May 18, 1979, Ser. No. 40,421

Int. Cl.³ B65G *47/24*

U.S. Cl. 198—379 **17 Claims**



1. A device for interrupting movement of an object carried along a path established by a conveyor including:

a pocket into which the object can move, defined by a peripheral surface on a drive means and a freely moving surface spaced apart from the peripheral surface and cooperating therewith to restrain motion in translation of an object between them;

means for directing an object carried by the conveyor into the pocket;

means for moving the peripheral surface of the drive means through the pocket in a direction tending to hold the object in the pocket; and

means for stopping motion of the freely moving surface to cause the object to roll out of the pocket.

4,248,339

GANTRY SCRAPER

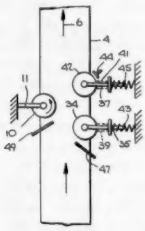
Gerhard Fischer, Dortmund-Kirchhorde, and Gunter Strocker, Holzwickede Krs. Unna, both of Fed. Rep. of Germany, assignors to Gustav Schade Maschinenfabrik GmbH & Co., Dortmund, Fed. Rep. of Germany

Filed Mar. 13, 1979, Ser. No. 20,235

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1978, 2811505

Int. Cl.³ B65G *65/02*

U.S. Cl. 198—519 **21 Claims**



1. In a gantry scraper for removing bulk material from a dump having a base, a top and lateral slopes, said gantry scraper including a movable gantry spanning said dump above its top and its lateral slopes and a single, elongated, rigid scraper jib pivotally supported at one end on one side of said gantry at the base of the adjacent one of the said lateral slopes of said dump so as to extend towards the other side of said gantry and being adapted to be swung in a substantially vertical plane with respect to said gantry, said jib having a length from its pivoted end appreciably less than the base width of said dump so that the free other end of said jib terminates appreciably short of the base of the other one of said lateral slopes of the dump, a clearing device arranged adjacent the free end of said jib so as to attack the portion of the dump outside and beyond the reach of the jib swing, said clearing device comprising at least one flexible rope-like tension member connected to the said free end of and actuated by said jib and extending diagonally upwardly and generally endwise therefrom between said free end of said jib and said other side of said gantry to span the distance therebetween, and a tensioning device operatively associated with said tension member for tensioning and maintaining said member taut and for allowing said swinging motion of said jib while carrying along said tensioned member.

4,248,340

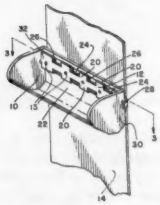
DETACHABLE CONVEYOR BUCKET

Danny L. Hild, P.O. Box 284, Tribune, Kans. 67879

Filed Jun. 27, 1979, Ser. No. 52,546

Int. Cl.³ B65G *17/36*

U.S. Cl. 198—711 **6 Claims**



1. A conveyor bucket and bracket assembly in which the bucket is attachable and separable from the bracket without the use of screws, bolts or other fasteners comprising an elongated bracket member defining a slide and a first set of lugs;

a cooperating bucket having a first wall, a second wall, and a side wall formed with an elongated opening, said opening having a notched periphery defining a second set of lugs;

said bucket being movable relative to said slide whereby the first set of lugs cooperate with said second set of lugs to removably interlock the bracket and the bucket;

said slide being formed with a latch operable to engage said second wall of said bucket to removably retain the bucket fixed relative to the slide;

said slide additionally being formed integrally with a generally T-shaped locking lug at a second end thereof, said locking lug flushing against one of the slide lugs to cooperate with said latch in removably retaining the bucket fixed relative to said slide.

4,248,341

ROLLER CONVEYOR AND ITS TRACK

Ludwig Schuck, and Hermann Benz, both of Darmstadt, Fed. Rep. of Germany, assignors to Carl Schenck AG, Darmstadt, Fed. Rep. of Germany

Filed Apr. 5, 1979, Ser. No. 27,515

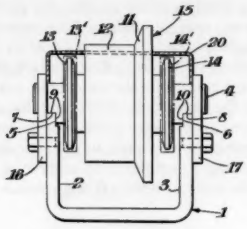
Claims priority, application Fed. Rep. of Germany, Sep. 7, 1978, 2838974

Int. Cl.³ B65G *13/07*

U.S. Cl. 198—790 **5 Claims**

1. A roller conveying track having a U-shaped track carrying flanged rollers within an open top and flanged rollers having shafts on sides thereof comprising top and upper inner edges on the sides of the U-shaped supporting track, sprocket and chain drives connected to the rollers and disposed within the track, precisely machined surfaces on the top and upper inner edges, precisely machined flats on the flanged roller shafts disposed parallel and perpendicular to the axes of the flanged roller shafts, shaft support plates secured by adjustable means to the outside of the U-shaped track, the flanged roller

shafts being received in the shaft support plates, the adjustable means including longitudinal slots in the support plates whereby the sprockets and chains may be tensioned without



misaligning the rollers, and the edges and flats being constructed and arranged to engage each other whereby the axes of the flanged roller shafts are maintained precisely aligned at close tolerances.

4,248,342

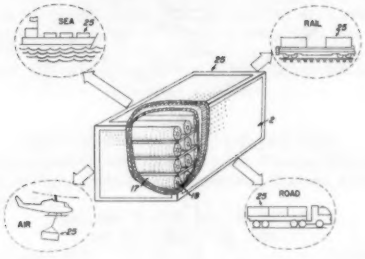
BLAST SUPPRESSIVE SHIELDING

Paul V. King, 813 Foxwell Ct., Joppatowne, Md. 21085; Albert F. Becher, 401 Summit Dr., Fallston, Md. 21047, and Wilmer P. Henderson, 114 W. Heather Rd., Bel Air, Md. 21014

Division of Ser. No. 699,738, Jun. 24, 1976, which is a continuation of Ser. No. 495,177, Aug. 6, 1974, abandoned. This application Sep. 24, 1979, Ser. No. 78,350

Int. Cl.[3] F42B *37/02;* **B65D** *25/02*

U.S. Cl. 206—3 **9 Claims**



1. A container for storing and transporting munitions including contained explosive, propellant and pyrotechnic items, comprising:

a first tube for receiving said munitions,

a second tube coaxial with and surrounding said first tube, and

spacer means for maintaining said tubes in fixed, spaced, coaxial relation,

wherein said tubes contain a plurality of apertures for attenuating blast overpressures.

4,248,343

DEVICE AND METHOD FOR PROTECTING BALED HAY FROM MOISTURE

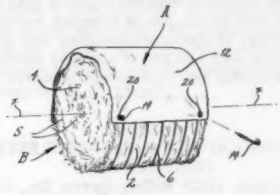
Alan W. Schaefer, Rte. 2, St. Genevieve, Mo. 63670

Filed Sep. 11, 1979, Ser. No. 74,500

Int. Cl.[3] A45C *3/00;* **B65D** *71/00*

U.S. Cl. 206—83.5 **17 Claims**

1. In combination with a bale of hay having adjacent stalks arranged generally parallel to each other, a device for protecting the hay of the bale from moisture, said device comprising: a cover located over the upwardly presented surface of the bale of hay and being formed from a water-impervious material; and elongated fasteners projected into the hay of the bale



and connected with the cover such as to secure the cover in place on the bale.

4,248,344

TAPE CASSETTE

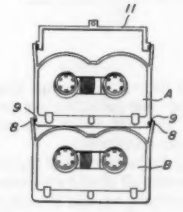
Masahide Yoshida, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 13, 1978, Ser. No. 959,752

Claims priority, application Japan, Nov. 15, 1977, 52-153243[U]

Int. Cl.[3] B65D *85/672*

U.S. Cl. 206—387 **3 Claims**



1. A tape cassette for use in minature tape recorders adapted to be releasably mounted together with a plurality of other similarly structured cassettes comprising: a housing having front and rear walls extending in juxtaposed parallel planes and edge walls defining together with said front and rear walls a cassette interior having magnetic tape accommodated therein; a pair of projection members extending in generally parallel opposed relationship from ends of an opposite pair of said edge walls on opposite sides of said housing; said projection members being formed essentially as integral extensions of each of said pair of edge walls, respectively, with said projection members each including a protuberance thereon arranged to extend from a side thereof facing toward the other of said projection members; a pair of engaging recesses formed in said edge walls, each of said recesses formed, respectively, on the same pair of said edge walls from which said projection members extend, said engaging recesses each being formed proximate an end of one of said pair of edge walls, respectively, opposite the end from which said projection members extend, each of said recesses being configured to receive said protuberances in releasable engagement therein; and a lug for preventing erroneous erasure of said tape formed along one of said pair of edge walls; said pair of projection members being arranged to define therebetween a spacing dimensioned to enable said projection members to receive in releasable mounting engagement therebetween a similar cassette having a configuration and dimensions like those of said tape cassette and including a similar pair of said engaging recesses and said projection members, said cassette being structured so that said similar cassette is engaged and held between said projection members with a resilient spring force; said pair of engaging recesses being adapted to be received between another pair of projection members similar to said pair of projection members and formed in another

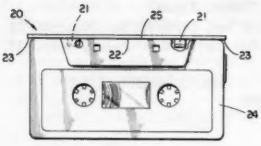
similar cassette having a configuration and dimensions like those of said tape cassette; said tape cassette being thereby adapted to be releasably mounted together with said similar cassette, with said similar pair of engaging recesses received between said pair of projection members, and with said another similar set, with said pair of engaging recesses received between said another pair of projection members.

4,248,345

PROTECTIVE CAP FOR A MAGNETIC RECORDING TAPE CASSETTE

Robert C. Bowers, 11123 Rolling Springs Dr., Carmel, Ind. 46032

Filed May 24, 1979, Ser. No. 42,038
Int. Cl.³ B65D *85/67, 45/00, 59/02*
U.S. Cl. 206—387 **9 Claims**



1. A protective cap for use with a tape cassette containing magnetic recording tape and including one generally flat wall defining at least one aperture which exposes said magnetic tape, said protective cap comprising:

(a) a strip adapted to be juxtaposed to the outside surface of said wall and covering all of said apertures defined by said wall, said strip extending beyond at least one edge portion of said wall and extending to at most the width of said wall; and

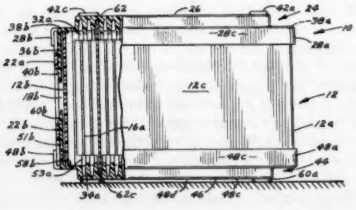
(b) means for maintaining said strip in position juxtaposed to the outside surface of said wall, said means including at least two prongs which project from one side of said strip and are adapted to project into one of said defined apertures, said prongs being spaced apart approximately the width of said aperture into which said prongs project.

4,248,346

SHIPPING CONTAINER FOR SEMICONDUCTOR SUBSTRATE WAFERS

Douglas M. Johnson, Waconia, Minn., assignor to Fluoroware, Inc., Chaska, Minn.

Filed Jan. 29, 1979, Ser. No. 7,300
Int. Cl.³ B65D *85/48*
U.S. Cl. 206—334 **4 Claims**



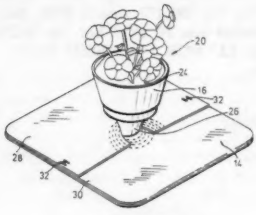
1. A shipping container for silicon semiconductor wafer substrates and the like, comprising a rectangular receptacle of resiliently yieldable plastic material having four adjoining sides and open top and bottom ends opposite each other, each side of the receptacle comprising an upright wall formed integrally and in one piece with the adjoining walls of adjacent sides, a first pair of said walls being disposed opposite to each other and having a multiplicity of upright ribs on the interior surfaces thereof and spaced regularly from each other for confining such substrates there between, a pair of top and bottom covers traversing said open ends and attached to the receptacle, said covers being entirely removable and completely detached from the receptacle walls, and having a substrate-engaging means on the inner surfaces of the covers for engaging and retaining the substrates in the container, and each of the covers having a peripheral lip embracing the end of the receptacle side walls in closely fitting relation.

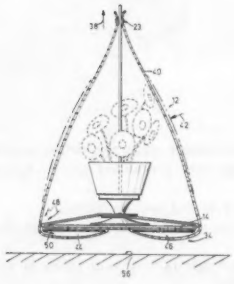
4,248,347

PACKAGING FOR FLORIST ARRANGEMENTS

Robert J. Trimbee, 1824 Jane St., Weston, Ontario, Canada

Filed Aug. 6, 1979, Ser. No. 63,940
Int. Cl.³ B65D *85/50;* **A01G** *9/02, 9/08*
U.S. Cl. 206—423 **22 Claims**





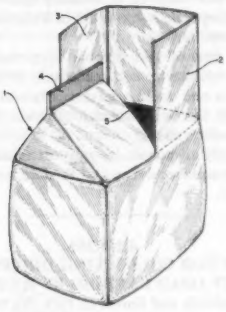
1. A foldable platform blank which, when folded, is adapted for engagement with floral arrangement containers, said blank being waterproofed corrugated cardboard with its corrugations extending the blank's length, two spaced-apart parallel score lines extending transversely of said corrugations to define hinge areas for providing similar platform end flaps, each flap free end having a medial recess and a plurality of spaced-apart rows of perforations arranged symmetrically about and spaced inwardly from the outline of said recess, the length of each end flap being greater than one-half and less than the distance between said score lines to provide overlapping end flap portions for securement to each other when folded to engage recess outline with a floral arrangement container.

4,248,348

PACKAGE FOR COMPOUNDING RUBBER AND COMPOUNDED RUBBER

Kim D. Butler, Uniontown; Ray A. Young, East Sparta, and Alfred L. Brown, Akron, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jul. 23, 1979, Ser. No. 59,804
Int. Cl.[3] B65D *81/00, 85/00;* B32B *7/02*
U.S. Cl. 206—447 **14 Claims**



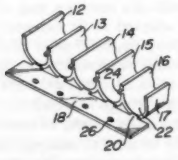
1. A package which comprises (A) an article selected from at least one of unvulcanized rubber or compounding ingredients for unvulcanized rubber packaged in (B) a protective film having a thickness in the range of about 0.5 to about 10 mils of a thermoplastic ethylene/vinyl acetate copolymer containing an anti-block agent and having a vinyl acetate content in the range of about 11 to about 22 percent and further characterized, when having a thickness of about 2 to 4 mils, by a melting point in the range of about 85° C. to about 95° C., a minimum ultimate tensile strength at 25° C. of about 1850 psi, an oil solubility melt index of about 63° C. to about 75° C. and a minimum 300 percent modulus at 25° C. of about 700 psi.

4,248,349

TRAY FOR AMPOULES OR THE LIKE

Merrel J. Locke, Linwood, and Arthur W. Penman, Toms River, both of N.J., assignors to Dougherty Brothers Company, Buena, N.J.

Filed Dec. 7, 1978, Ser. No. 967,467
Int. Cl.[3] B65D *1/34, 6/04*
U.S. Cl. 206—538 **7 Claims**



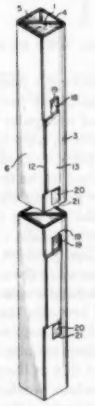
1. An article of manufacture comprising an open top tray having a plurality of upright partitions, two of said partitions being the side walls of the tray, each partition cooperating with the next adjacent partition to define parallel generally U-shaped troughs, upright end walls pivotably connected to opposite ends of said partitions at the trough bight portion by a reduced thickness hinge whereby said end walls may pivot from a horizontal position to an upright disposition, the height of said end walls being not greater than the height of the adjacent end of said partitions, said end walls and at least some of said partitions having cooperating means including a discrete projection on at least two of said partitions disposed between said side walls and at the end thereof, said means including a mating hole for each projection in one of said end walls to facilitate locking said end walls in an upright disposition generally perpendicular to said partitions, said partitions and walls being integral in one piece with said hinges and being made from a polymeric plastic, and adjacent partitions having an integral projection extending into the trough therebetween for securing an ampoule in the trough.

4,248,350

CORNER POST WITH INTEGRAL LOCK

Earl F. Gilbert, Farmington Hills, Mich., assignor to Westvaco Corporation, New York, N.Y.

Filed Oct. 22, 1979, Ser. No. 86,730
Int. Cl.[3] B65D *81/02*
U.S. Cl. 206—586 **1 Claim**



1. A corner post blank constructed from a sheet of foldable material that is normally stored and shipped in a flat condition and when erected into its corner post configuration assumes a quadrilateral cross sectional configuration, said blank comprising:

(a) a substantially rectangular piece of foldable material having parallel top and bottom edges and opposed side edges, said piece of material being scored longitudinally along parallel fold lines to produce a plurality of discrete major panels of substantially the same width and length, at least four of said panels being adapted to form the quadrilateral structure, another of said panels being adapted to form a diagonally oriented full length reinforcing means and another of said panels being adapted to overlap one of said four quadrilateral panels; and,

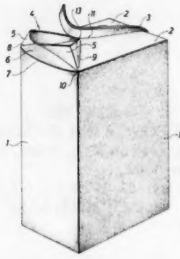
(b) an external locking means integral with said blank for locking the panels in their corner post configuration, said locking means comprising a plurality of locking flaps foldably attached along an edge of one of said discreet panels, locking ears foldably attached to each end of each locking flap along first, transversely extending scored fold lines, and a plurality of cooperating locking tabs formed in another of said discreet panels which are connected thereto along second, transversely extending scored fold lines that are longitudinally offset from said first fold lines, the improvement wherein the first scored fold lines are aligned from side-to-side on the blank with the leading edges of said locking tabs.

4,248,351

PACKAGING CONTAINER WITH A POURING SPOUT

Nils R. F. Berg, Dalby, Sweden, assignor to Tetra Pak International AB, Lund, Sweden

Filed Jun. 20, 1978, Ser. No. 917,201
Claims priority, application Sweden, Jun. 20, 1977, 7707098
Int. Cl.³ B65D *5/74*
U.S. Cl. 206—620 **13 Claims**



1. A packing container with an unfoldable pouring spout, comprising:

a packing container having a pouring spout that automatically assumes an unfolded position, said pouring spout having a plurality of triangular wall panels defined by a plurality of folding lines, namely a first wall panel joined to a side face of the packing container and a pair of second wall panels each joined to the first wall panel as well as to an upper side of the packing container; and

means included on said packing container for causing the pouring spout to automatically unfold from a foldeddown position to an unfolded position, said means including:

folding lines located between the second wall panels and the upper side of the packing container; and

a folding line located between the first wall panel and the side face of the packing container;

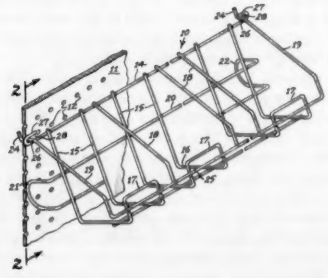
wherein said folding lines located between the second wall panels and the upper side of the packing container consist of weakening lines which weaken the packing material to an appreciably greater extent than said folding line located between the first wall panel and the side face of the packing container.

4,248,352

WIRE POCKET DISPLAY DEVICE

Elzie T. White, Old Hickory, Tenn., assignor to Nashville Wire Products Manufacturing Co., Nashville, Tenn.

Filed Apr. 27, 1979, Ser. No. 33,858
Int. Cl.³ A47F *5/01*
U.S. Cl. 211—88 **2 Claims**



1. A display device adapted to be supported upon an upright support member having a pair of laterally spaced columns of vertically spaced uniform apparatus, comprising:

(a) a display receptacle for receiving at least one article for display,

(b) first and second pegs projecting rearward from said receptacle and having a normal lateral spacing,

(c) each peg being an elongated, yieldable, semi-rigid, flexible wire rod, of uniform size, and adapted to be received in an aperture in the support member so that when both said pegs are received in laterally spaced apertures, said display receptacle is mounted in a stable position on said support member,

(d) at least one of said flexible wire rods being laterally movable relative to said receptacle to be received in an aperture in one column having a lateral spacing from an aperture in the other column different from said normal lateral spacing, and

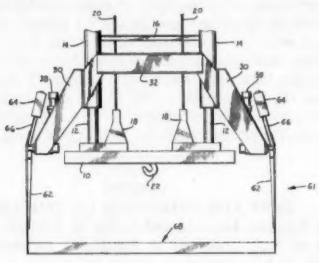
(e) a vertically disposed, laterally extending, guide slot in said receptacle receiving said flexible wire rod for lateral movement.

4,248,353

APPARATUS FOR COLLECTING DRIPPINGS FROM A WET LOAD CARRIED BY A CRANE

Mieczyslaw Budzich, and Forest G. Fitz, Jr., both of Lexington, S.C., assignors to Nassau Recycle Corporation, Staten Island, N.Y.

Filed Mar. 16, 1979, Ser. No. 21,274
Int. Cl.³ B08B *3/04*; B66C *13/00*
U.S. Cl. 212—128 **3 Claims**



1. Apparatus for collecting drippings from a wet load carried by a crane having a carriage to which means for lifting loads are mounted for movement up to and down from a load carrying station beneath the carriage, and with the apparatus comprising supports adapted to be mounted dependent from the crane carriage along opposite sides of the load carrying station; a cradle pivotably suspended from said crane for pivotal movement about an axis located adjacent the load carrying station and comprising a trough from which a pair of mutually spaced swing arms upwardly extend to said axis and a pair of counterweights rigidly secured to said pair of swing arms to a side of said axis radially opposite that of said trough; and means for pivoting said cradle between a lowered position beneath the load carrying station and a raised position beside the load carrying station.

4,248,354

ROTARY LOCKSETTING MECHANISM FOR A RIGID JAW COUPLER

William J. Metzger, Willowick, Ohio, assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Aug. 3, 1979, Ser. No. 63,462
Int. Cl.³ B61G *3/00*
U.S. Cl. 213—100 W **11 Claims**

1. A coupler having a shank extending from a chambered

head with a buffing face that connects a pair of laterally spaced fixed jaws, and a locking mechanism which comprises:

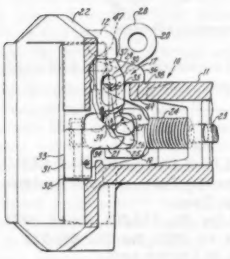
(a) a spring biased lock disposed within the chambered head and movable generally longitudinally of the coupler shank between a locked position and a lockset position, the lock having an axially elongated slot therein;

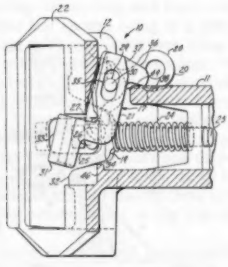
(b) a locklifting lever for moving the lock between the locked and lockset positions, the lever having a pair of opposing ends;

(c) means mounting the lever on the coupler head for limited rotation about an axis which is normal to the direction in which the lock moves between the positions;

(d) a handle at one of the opposing ends of the lever and disposed exteriorly of the coupler head for operating the lever;

(e) a lug and rocker arm disposed within the chambered head at the other of the opposing ends of the lever, the lug and arm extending in opposite directions from the plane of the lever, the rocker arm being received in the slot of the





lock and designed to move the lock axially against the lock biasing spring, when the handle of the lever is rotated in one direction to operate the lever;

(f) a pawl for engaging the lug and holding the lock in the lockset position, the pawl having a plate at one end of a pair of opposing ends thereof for receipt in an opening disposed in the buffing face of the coupler adjacent the lock, the pawl including, (i) an abutment for coming to rest in interlocking engagement with the lug when the lock is moved by the lever to the lockset position, and (ii) means for forming a fulcrum, adjacent the other end of the pair of opposing ends of the pawl, around which the pawl rotates in a plane normal to the rotational axis of the lever as the lock moves from the lockset position to the locked position, the fulcrumming of the pawl being such that the abutment moves in a direction to cause disengagement from the lug as the pawl rotates; and

(g) means mounting the pawl for limited movement in an angular direction relative to the direction in which the lock moves between the positions.

4,248,355

CLOSURE FOR SAMPLE VIALS

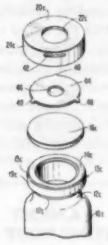
Bruno Kolb, Owingen; Dietrich Boege, Daisendorf; Peter Pospisil, and Hubert Riegger, both of Überlingen, all of Fed. Rep. of Germany, assignors to Bodenseewerk, Perkin-Elmer & Co., GmbH, Überlingen, Fed. Rep. of Germany

Filed Aug. 3, 1979, Ser. No. 63,629

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1978, 2834186

Int. Cl.[3] **B65D** *41/20, 51/16;* **B01L** *3/12*

U.S. Cl. 215—274 **4 Claims**



1. A closure for a sample vial utilized for introducing a sample into a gas chromatograph in accordance with the head space method comprising:

a flexible disc for closing the opening through the neck of a sample vial and overlying the margin of said neck about said opening;

a cap having a central aperture defining an annular shoulder about said aperture for overlying said disc, said cap having an annular depending skirt encompassing said disc for clamping about said neck of said vial to retain said disc and said cap on said vial; and

means carried by said cap enabling deformation of at least a part of the skirt portion thereof for venting said vial to atmosphere in response to a pressure, which is in excess of a predetermined pressure, within said vial when said closure is affixed thereto.

4,248,356

SEALING METHOD

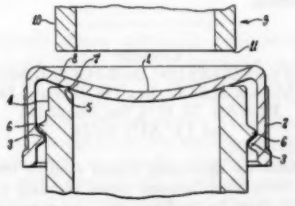
Bruce L. McCarthy, Woollahra, and Karl M. Dunn, Castle Hill, both of Australia, assignors to ACI Technical Centre Pty. Ltd., New South Wales, Australia

Filed Jan. 2, 1979, Ser. No. 574

Claims priority, application Australia, Jan. 9, 1978, PD2981; Sep. 15, 1978, PD5961

Int. Cl.[3] **B29C** *27/08, 25/00;* **B29D** *9/00*

U.S. Cl. 215—344 **9 Claims**



1. A method of improving the gastightness of an annular seal formed between a closure and a circular opening provided at the end of a hollow neck member of a container, said closure including a circular upper portion with an integral tubular skirt portion depending therefrom, said tubular skirt portion being telescopically mounted on the hollow neck member with said

upper portion over said opening, said method including the steps of,

(i) removably securing said closure to said neck whereby an annular sealing surface forming part of said closure bears upon a complementary annular sealing surface of said neck,

(ii) pressing a horn down upon the upper portion of said closure,

(iii) applying ultrasonic energy through said horn to cause localized softening or melting of at least one of said sealing surfaces,

(iv) maintaining said horn pressure for a time sufficient to allow one of said sealing surfaces to flow and mold itself into conformity with the other sealing surface,

(v) discontinuing said application of ultrasonic energy within a period which is sufficiently short to ensure that substantially no welding between said sealing surfaces occurs whereby said closure may be removed from said container without rupturing said sealing surfaces,

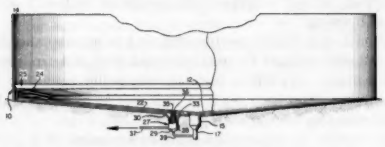
(vi) removing said horn from pressing engagement with said upper portion.

4,248,357

FLOATING ROOF DRAIN

Donald C. Stafford, Hinsdale, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Aug. 27, 1979, Ser. No. 70,096
Int. Cl.[3] B65D *87/18*
U.S. Cl. 220—219 **6 Claims**



1. In a cylindrical tank, for the storage of a liquid, having a floating roof with a diameter less than the internal diameter of the tank and adapted to float on the liquid, and with said floating roof deck being open to the weather, the drain improvement for gravity removal of water from the deck of the floating roof, comprising:

a flexible coiled hose having a lower outlet end in communication with a conduit inlet in a lower portion of the tank, and an upper inlet end in communication with a sump space on the floating roof deck,

said coiled hose being extensible in length for a distance at least equal to the height the floating roof is vertically displaceable in the tank when it is full and empty of liquid, and

a coiled hose housing at the tank bottom for receiving the hose in coiled form when the floating roof rests on the tank bottom.

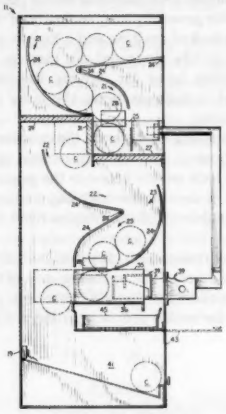
4,248,358

QUALITY-PRESERVING HOT-FOOD DISPENSER

Thomas B. Muench, R.R. #2, Box 198, Waverly, Ill. 62692

Filed Apr. 23, 1979, Ser. No. 32,261
Int. Cl.[3] A47J *36/26*
U.S. Cl. 221—150 A **7 Claims**

1. Apparatus for dispensing heated food or beverages in containers, comprising: housing means encasing at least one chute-like structure for holding a plurality of said containers, heat-insulating means dividing said chute-like structure into a lower heating section and an upper storage section, means for heating said lower section, dispensing means positioned adjacent the lower end of each section, and control means for substantially simultaneously dispensing a container from the lower section and releasing a container from the upper section for movement into the lower section, to maintain in the heating section only the number of containers desired to be therein in anticipation of the expected short-time sales volume, whereby



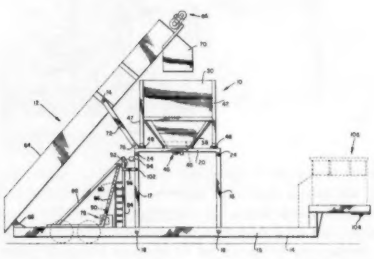
the quality of the heated commodity will be protected against quality-lowering prolonged heating.

4,248,359

WEIGH-OUT SYSTEM FOR COLLAPSIBLE SURGE BIN

James D. Brock, Chattanooga, Tenn., assignor to Astec Industries, Inc., Chattanooga, Tenn.

Continuation-in-part of Ser. No. 912,501, Jun. 5, 1978. This application Oct. 16, 1978, Ser. No. 951,373
Int. Cl.[3] B67D *5/06*
U.S. Cl. 222—58 **4 Claims**



1. A collapsible surge bin for weighing and dispensing fluent material therefrom comprising:

a horizontal main frame;

a horizontal secondary frame pivotally mounted above said main frame on a plurality of legs, said plurality of legs each being pivotally connected at one end thereof to said main frame and at the other end thereof to said secondary frame so as to allow said secondary frame to be selectively lowered to rest on said main frame and raised to a position above said main frame;

a bin mounted on said secondary frame by a plurality of braces;

a plurality of load cells, one of said load cells being interposed between each of said braces and said secondary frame, said load cells each providing a signal corresponding to the weight borne by said load cell; and

means responsive to the sum of said signals from said load

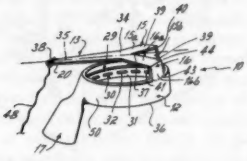
cells for dispensing material from said bin in its raised position.

4,248,360

REMOTE CONTROL CAP FOR A SPRAY CAN

Robert F. Crump, 333 Guthrie Green, Louisville, Ky. 40202

Filed Sep. 10, 1979, Ser. No. 74,396
Int. Cl.³ B65D *83/14*
U.S. Cl. 222—174 **4 Claims**



1. A remote control cap for a spray can, said can including a head and a depressible spray control valve on said head, spray from said can being exhaustible in a direction generally perpendicular to the longitudinal axis of said can, said cap comprising

a snap-on collar sized and configured to connect said cap to a bead on said can's head,

a movable lever arm adapted to overlie said can's depressible spray valve, said lever arm being movable between a non-contact position and a contact position relative to said valve, said lever arm being normally biased into a non-contact position with said valve, and when said can is upright said lever arm being actuable into a contact position with said valve in response to a generally downward force, relative to ground, exerted on the free end of said lever arm,

two spaced leaf-type springs connecting said lever arm and said snap-on collar, said leaf springs being of a generally V-shaped configuration with said lever arm being connected to said spring at the V apex of said springs, each of said leaf springs being integrally formed with said collar at one end and with said lever arm at the other end, and said leaf springs where connected with said collar being spaced one from the other a distance sufficient to permit spray from said can to exhaust therebetween through a port at least partially defined by said leaf springs for allowing spray from said can to be exhausted from said can in a direction generally perpendicular to the axis of said can, and

a pole socket formed integral with said collar, said pole socket being adapted to receive an extension pole in assembly therewith, and said pole socket defining a center line located at an acute angle to the center line of said can when said cap and said can are assembled together,

said snap-on collar, said lever arm, said leaf springs and said pole socket being fabricated of a one-piece structural configuration.

4,248,361

TOOTHPASTE TUBE HOLDING AND CLOSING DEVICE

Austin Moyle, 2700 N. Meridian Rd., Meridian, Id. 83642

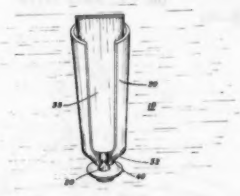
Continuation-in-part of Ser. No. 859,261, Dec. 12, 1977, abandoned. This application Sep. 21, 1979, Ser. No. 77,674
Int. Cl.³ B65D *35/56*
U.S. Cl. 222—179.5 **5 Claims**

1. Apparatus for holding and closing tubes of the type used for toothpaste and toiletries comprising:

a tapered plug partially insertable into the tube opening and adapted to sealingly engage the tube opening;

a primary tube guide having a frontal void and axially aligned with said plug and including a jacket, longitudinally tapered from top to bottom, substantially elliptical in cross section and operable to direct the tube opening toward said plug;

a secondary, inverted bell shaped, tube guide depending downwardly from said primary guide and operable to



center the tube opening on said plug and retain the tube in an inverted vertical position; and

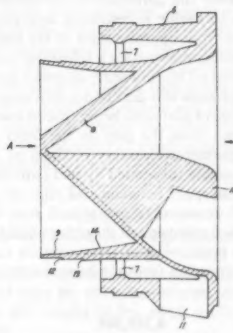
support means for holding said guide means in a fixed relationship to said plug.

4,248,362

DISPENSER CLOSURE

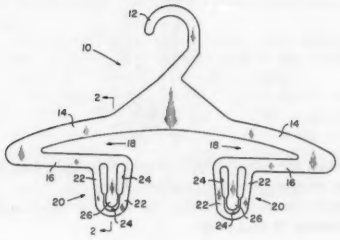
William C. Welsh, and Peter G. Kailis, both of 342 Scarborough Beach Rd., Osborne Park W.A., Australia (6017)

Filed Sep. 27, 1979, Ser. No. 79,464
Int. Cl.³ B65D *47/20*
U.S. Cl. 222—505 **10 Claims**



1. A dispenser closure comprising a tubular spout to be connected at one end to a fluid container and a cap fitted to the other end of the spout, said cap being provided with a transverse wall of elastomeric material extending across the other end of the spout and being substantially wedge shaped in cross section with the wedge projecting inwardly into the other end of the tubular spout, an inwardly directed peripheral flange mounted on said transverse wall to sealingly engage with the inner surface of the tubular spout, a discharge outlet formed outwardly of the region of sealing engagement between said peripheral flange and the inner surface of the tubular spout, the outer face of the transverse wall being provided with an outwardly directed protrusion to be manipulated to distort the transverse wall and the portion of the peripheral flange adjacent the discharge outlet to cause fluid flow from the container through the discharge outlet.

4,248,363
GARMENT HANGER
Jack M. Zuckerman, Forest Hills, and John Warmath, Brooklyn, both of N.Y., assignors to Cut Rate Plastic Hangers, Inc., Brooklyn, N.Y.
Filed Apr. 26, 1979, Ser. No. 33,579
Int. Cl.[3] A47J *51/14*
U.S. Cl. 223—91 **2 Claims**



1. In a garment hanger having means for suspending the hanger and a pair of shoulders connected with and substantially oppositely extending outward from the suspending means,

a pair of arms spaced from each other, each arm inwardly extending from and unitarily connected to a respective one of the shoulders and defining a notch between each said arm and the unitarily connected shoulder for receiving therethrough a suspendedly extending portion of a first garment supported on the hanger shoulders so as to facilitate retention of the garment on the hanger,

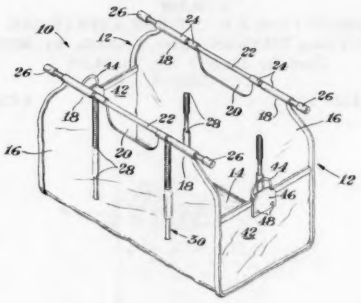
and gripping means carried on each said arm for retaining and suspending a second garment to the hanger such that the two garments are simultaneously supported by the hanger whereby the garments are suspended in side-by-side relation to enable unrestricted individual display of each garment from opposite sides of the hanger,

said gripping means comprising a releasable garment-retaining clip carried on the inwardly disposed portion of each of said spaced arms and depending downward therefrom, said clip on one of said arms being spaced apart a predetermined distance from the clip on the other of said arms such that a garment releasably retained by said gripping means is releasably suspended by said clips from said arms and across said space between said clips on each arm,

and the inward extension of one of said arms being greater than the inward extension of the other of said arms so as to facilitate the positioning of a garment on the hanger for supported suspension from the hanger shoulders.

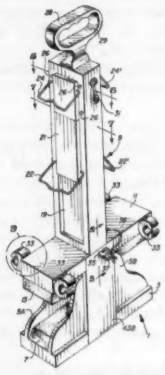
4,248,364
ARTICLE CARRIER
Robert F. Anderson, 4718-10th St., Menominee, Mich. 49858
Filed Aug. 8, 1979, Ser. No. 64,552
Int. Cl.[3] A45C *7/00, 13/34*
U.S. Cl. 224—45 AC **4 Claims**

1. A self-standing carrier comprising an elongated, substantially rectangular, flexible web forming the bottom and sidewalls of said carrier, said carrier including end panels, each said end panel having a securing means for holding the upper sidewalls of said carrier in closed position, said web fitted with a tubular handle attached to each end of each upper sidewall, the ends of each said handle extending beyond the edge of the web, and said handles communicating with the securing means in the end panels of said carrier, said web fitted with a plurality of spaced apart generally ∪-shaped supporting frame members of length about the same as said web, said ∪-shaped members being positioned at spaced apart positions across the width of said web, said ∪-shaped frame members defining the shape of the bottom and sidewalls of said carrier, the upper arm portions of said frame members being flexible thereby permitting



the upper sidewalls of said carrier to bend inwardly and outwardly.

4,248,365
PORTABLE SKI EQUIPMENT CARRIER
Kenneth P. Jacobs, 2332 W. Cortez, Phoenix, Ariz. 85029
Filed Nov. 6, 1978, Ser. No. 957,994
Int. Cl.[3] A45F *3/00;* **B65D** *69/00*
U.S. Cl. 224—45 S **6 Claims**



1. Apparatus for carrying skis, ski poles, and ski boots, said apparatus comprising in combination:

a. a handle;

b. a boot tree including:

i. an upright column having an upper end and a lower end;

ii. a base plate having an upper surface and a lower surface, the upper surface of said base plate being rigidly attached to the lower end of said upright column, said upright column being perpendicular to said base plate;

iii. means for fastening a pair of ski boots to said upright column;

c. a ski holder including

i. a bottom plate for supporting skis, said bottom plate having a lower surface and an upper surface;

ii. a first vertical side attached to one edge portion of said bottom plate and a second vertical side attached to an opposed edge portion of said bottom plate;

d. hinge means for pivotally connecting a first edge portion of said base plate to an upper edge of said first vertical side, said base plate forming a pivotally connected top plate for said ski holder, whereby said base plate can be pivoted to raise said base plate in order to allow skis to be

placed in said ski holder and to lower said base plate to clamp the skis in said ski holder;

e. fastening means for rigidly fastening a second portion of said base plate to an upper edge of said second vertical side to secure said base plate in fixed rigid parallel relationship to said bottom plate when said fastening means is engaged, said second edge portion being an opposite edge portion of said base plate, said upright column always being perpendicular to said bottom plate when said fastening means is engaged;

f. first and second ski pole holding clips attached to opposed ends of a first side surface of said base plate and third and fourth ski pole holding clips attached to opposite ends of a second side surface of said base plate for supporting first and second parallel ski poles, said fastening means being positioned to avoid extending of any portion of said fastening means between either said first and second ski pole holding clips or said third and fourth ski pole clips, thereby avoiding interfering with any ski pole held by any of said ski pole clips; and

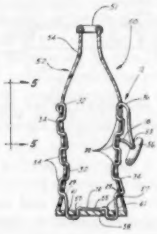
g. a first resilient pad attached to the upper surface of said bottom plate and a second resilient pad attached to the lower surface of said base plate, said first and second resilient pads being sufficiently thick to engage the respective edges of skis placed in said ski holder so as to securely but non-rigidly clamp the skis into said ski holder between said base plate and said bottom plate.

4,248,366

ADJUSTABLE BEVERAGE CONTAINER HOLDER

James S. Christiansen, 5288 Austin Rd., Santa Barbara, Calif. 93111

Filed May 10, 1979, Ser. No. 37,816
Int. Cl.³ A45C *11/00*
U.S. Cl. 224—148 **9 Claims**



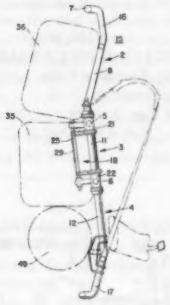
1. A beverage container carrier comprising a resilient, insulating concave, cylindrical casing for snugly surrounding a beverage container, said casing having parallel columns of at least two vertically aligned apertures located diametrically opposite each other on each side of said casing, and a flexible line is formed in a loop with trailing extremities, each of said trailing extremities being laced through the apertures in opposite ones of said vertical columns, and the resilient structure of said casing squeezes said line against said container to exert friction thereon, thereby preventing the weight of said container from causing relative movement between said casing, said container and said line, and said resilient casing elastically yields to accomodate longitudinal adjustment of said line relative to said casing when longitudinal tension on said line is exerted which exceeds the weight of a container to lengthen and shorten said loop as desired, and enlargements are located in said trailing extremities of said line below the lowermost of each of said apertures in each of said columns of apertures to limit downward movement of said casing and said container relative to said line.

4,248,367

CONVERTIBLE PACK ASSEMBLY

G. Theodore Buel, R. 23 Little Rive Dr., Knoxville, Tenn. 37920

Filed Jun. 14, 1979, Ser. No. 48,697
Int. Cl.³ A47D *13/02*
U.S. Cl. 224—153 **10 Claims**



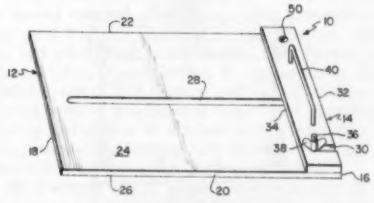
1. A convertible pack assembly including, a frame assembly including upper, medial and lower frame sections, each said frame section having a pair of laterally spaced apart side braces, transverse pivot joints connecting said frame sections in series, said frame sections displaceable about said pivot joints into a first mode with said frame sections substantially longitudinally aligned, a slidable pack mount provided with a plurality of lockable sleeves overlying said pivot joints when said pack mount is juxtaposed said medial frame section to fixedly retain said pack assembly in the said first mode, said pack mount including top and bottom cross members connecting laterally adjacent pairs of said lockable sleeves, a vertical rod extending from said top cross member and disposed through said bottom cross member, said pack mount and sleeves axially shiftable from juxtaposition said medial frame section to a point juxtaposition said lower frame section with said pack mount being collapsed when shifted to said lower frame section as the axial distance is reduced between said top cross member and its connected sleeves and said bottom cross member and its connected sleeves whereby, said pivot joints are uncovered and said plurality of frame sections are displaceable about said joints to a folded second mode.

4,248,368

DEVICE FOR SUPPORTING DUCK DECOYS OR THE LIKE

David R. Lindsay, 8324 Burrell Dr., Austin, Tex. 78758

Filed May 16, 1979, Ser. No. 39,687
Int. Cl.³ A01M *31/06*; A01K *97/00*
U.S. Cl. 224—249 **10 Claims**



1. A device for supporting duck decoys or the like comprising

a base having first and second longitudinal ends and upper and lower surfaces;

a narrow slot extending through said base between said

upper and lower surfaces, opening on said first end and terminating in said base at a distance from said second end; and

latch means pivotally coupled to said base adjacent said first end and movable between open and closed positions for selectively opening and closing access to and from said slot through said first end.

4,248,369

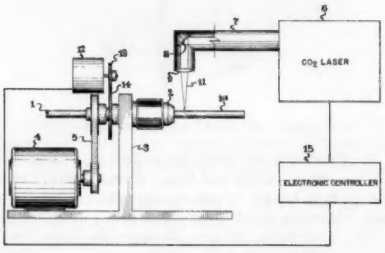
LASER CUTTING OF CERAMIC TUBING

Edward M. Clausen, Eastlake, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 2, 1979, Ser. No. 62,918

Int. Cl.³ B26F *3/00*

U.S. Cl. 225—2 **5 Claims**



1. The method of cutting ceramic material which comprises:

drilling a series of fine shallow holes in the material by focusing a pulsed laser beam thereagainst at a series of spaced spots,

deepening said holes by repeatedly directing the beam into the identical spots at spaced time intervals, and

breaking said material along the line of weakness determined by said holes.

4,248,370

EQUIPMENT FOR BREAKING THE SCRAP OR USEFUL PARTS AWAY FROM STAMPED WORKPIECES FROM FLAT MATERIAL

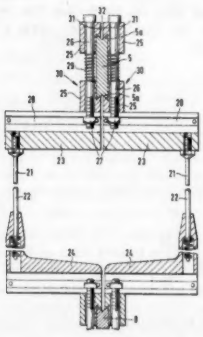
Friedrich Schröter, Isernhagen, Fed. Rep. of Germany, assignor to WUPA Maschinenfabrik GmbH, Fed. Rep. of Germany

Filed Apr. 11, 1979, Ser. No. 29,001

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1978, 2815797

Int. Cl.³ B26F *3/00*

U.S. Cl. 225—97 **11 Claims**



11. Apparatus for breaking away parts from workpieces, comprising a first set of work-engaging fingers to be disposed on one side of a workpiece, a second set of work-engaging fingers to be disposed on an opposite side of the workpiece and oppositely disposed first and second supporting means for movably supporting said first and second sets of work-engaging fingers, respectively, each of said first and second supporting means including a guide rail having first and second substantially V-shaped guiding grooves formed in upper and lower surfaces, respectively, thereof, first and second clamping means mounted on opposite sides of said guide rail and spaced apart relative to each other in said first and second substantially V-shaped guiding grooves so that said first and second clamping means can be moved past each other on said guide rail without interference, each clamping means including first and second clamping jaws, each of said first and second clamping jaws being mounted to engage and move relative to said first and second substantially V-shaped guiding grooves, respectively, and being adjustably connected to the other of said first and second clamping jaws for movement relative to said first and second substantially V-shaped guiding grooves, and first and second holding means connected to said first and second clamping means, respectively, each holding means holding at least one work-engaging finger of one of said first and second sets of work-engaging fingers.

4,248,371

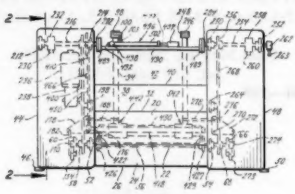
WELDING MACHINE

Vernon L. Melton, 1600 W. Main St., Washington, Mo. 63090

Filed Mar. 12, 1979, Ser. No. 19,764

Int. Cl.³ B23K *9/225, 37/02*

U.S. Cl. 228—7 **26 Claims**



1. A machine that provides relative movement between a workpiece and a work-performing element and which comprises a support for said workpiece, a support for said work-performing element, a reversible driving element, members operated by said driving element to provide rotation of one of said supports in a given direction and then in the opposite direction about a predetermined axis, further members operated by said driving element to provide movement of the other of said supports transversely of said predetermined axis, said further members causing said other support to follow a path which is a composite of a component of motion in one direction transversely of said predetermined axis plus a second component of motion in a different direction transversely of said predetermined axis, the first said members coacting with said driving element to limit rotation of said one support to a predetermined angle of less than three hundred and sixty degrees about said predetermined axis while said work-performing element is performing work on said workpiece, said first said members thereafter coacting with said driving member to rotate said one support in the opposite direction about said predetermined axis, said further members responding to said driving element to move said other support in a predetermined direction through said composite path and thereby provide relative movement between said workpiece and said work-performing element which resembles relative movement that would be produced between said workpiece and said work-performing element if said first said members were able to coact with said driving element to rotate said one support a substantial angular distance beyond the end of said predetermined angle, whereby said rotation of said one support in said

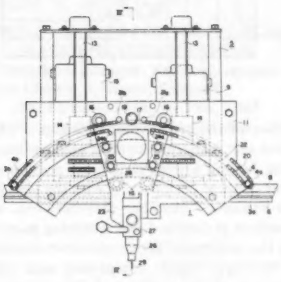
given direction by said first said members and said movement of said other support in said predetermined direction by said further members enables said work-performing element to perform work on said workpiece of an angular extent which is substantially greater than said predetermined angle.

4,248,372

APPARATUS FOR AUTOMATICALLY WELDING CORRUGATED MEMBRANES

Hirokazu Nomura, and Tadashi Fujioka, both of Tsu, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 5, 1979, Ser. No. 45,655
Claims priority, application Japan, Jun. 26, 1978, 53-86765[U]
Int. Cl.³ B23K *37/02*
U.S. Cl. 228—32 **4 Claims**



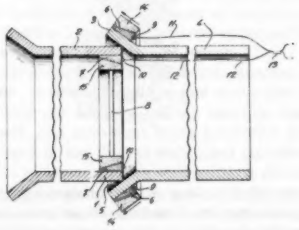
1. In an apparatus for automatically welding corrugated membranes including a welding torch mounted on a head attached to a welding apparatus proper by way of an arc gear segment and a pinion gear adapted to drive said arc gear segment so as to cause an angular movement of said head along said arc gear segment and thereby to control the position of said torch, the improvement wherein a rotatable small wheel is provided at each end of said arc gear segment, wherein a cord comprising a chain, wire or the like and fixedly attached at the ends thereof to said welding apparatus proper to form a ring, is extended around said small wheels and along arcuate teeth of said arc gear segment, and wherein a middle portion of said cord is fixedly attached to said head adapted to be movable along said arc gear segment.

4,248,373

EXPLOSIVE CHARGE FOR EXPLOSIVE WELDING OF LARGE DIAMETER METAL PIPE

Vonne D. Linse, and Harry E. Pattee, both of Columbus, Ohio, assignors to Canadian Industries Limited, Montreal, Canada

Filed May 21, 1979, Ser. No. 40,514
Int. Cl.³ B23K *20/08*
U.S. Cl. 228—107 **2 Claims**



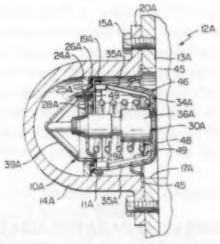
1. In a method of welding together a pair of metal tube sections in which the ends of the tube sections for linear connection are positioned together telescopically in male/female relationship, the female pipe end being flared outward at an acute angle to the wall of the pipe and in which opposite internal and external substantially concentric, continuous bank-like charges of welding explosive are detonated simultaneously against and around the exterior surface of said female flared tube end and the interior surface of said male tube end in order to drive together the said male and female tube ends to form a welded connection, an improvement which comprises providing explosive band charges having a tapered or wedged shape in the width cross-section of the band, said wedged or tapered band charges being adapted for placement so that the thicker edge of the band is closest to the narrow diameter of the said female flared pipe area and initiation of the band charges is made along the said thicker edge.

4,248,374

ENGINE COOLING SYSTEM THERMOSTAT AND METHOD OF MAKING THE SAME

Boyd P. Sliger, Concord, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Mar. 28, 1979, Ser. No. 24,575
Int. Cl.³ G05D *23/12*
U.S. Cl. 236—34.5 **40 Claims**



10. In a vehicle engine cooling system having an outlet housing secured to an engine block means and provided with an opening receiving a vehicle type thermostat having a housing means provided with a valve seat that is controlled by a movable valve member which is interconnected to a temperature responsive device that is carried by said housing means, the improvement wherein said opening of said outlet housing has a substantially oval cross-sectional configuration defined by opposed pairs of surface means of said outlet housing that respectively define a major diameter and a minor diameter of said oval opening therebetween, said housing means having interference fit positioning means thereon engaging said pair of opposed surface means of said outlet housing that define said minor diameter of said oval opening thereof for rotationally orienting said housing means in said opening of said outlet housing whereby said thermostat can be disposed in the desired rotational position in said cooling system, said housing means having opposed ends and including a relatively short annular skirt disposed intermediate said opposed ends and having said positioning means thereon, said housing means including a spring retainer having an annular spring seat portion defining one of said opposed ends of said housing means and having a pair of strap portions respectively extending from said spring seat portion to adjacent said annular skirt, and a retaining member positioning said thermostat in said outlet housing and being secured to said strap portions.

18. In a vehicle engine cooling system having an outlet housing secured to an engine block means and provided with an opening receiving a vehicle type thermostat having a housing means provided with a valve seat that is controlled by a movable valve member which is interconnected to a temperature responsive device that is carried by said housing means, the improvement wherein said opening of said outlet housing

has a substantially oval cross-sectional configuration defined by opposed pairs of surface means of said outlet housing that respectively define a major diameter and a minor diameter of said oval opening therebetween, said housing means having interference fit positioning means thereon engaging said pair of opposed surface means of said outlet housing that define said minor diameter of said oval opening thereof for rotationally orienting said housing means in said opening of said outlet housing whereby said thermostat can be disposed in the desired rotational position in said cooling system, said housing means having opposed ends and including a relatively short annular skirt disposed intermediate said opposed ends and having said positioning means thereon, said housing means including a spring retainer having an annular spring seat portion defining one of said opposed ends of said housing means and having a pair of strap portions respectively extending from said spring seat portion to adjacent said annular skirt, and a retaining member positioning said thermostat in said outlet housing and being secured to said strap portions, said retaining member having a pair of opposed legs respectively extending outwardly from said pair of strap portions and being received between said outlet housing and said engine block means, said retaining member having clip means securing said retaining member to said strap portions.

4,248,375

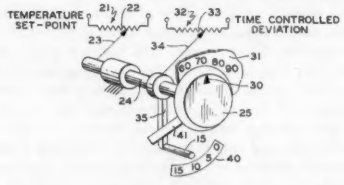
CLOCK THERMOSTAT APPARATUS HAVING MEANS FOR REDUCING THE SETBACK TEMPERATURE WHEN THE NORMAL TEMPERATURE SELECTION IS TURNED DOWN

John M. Whitney, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 30, 1979, Ser. No. 71,148

Int. Cl.³ F28D *5/00*; F23N *5/20*

U.S. Cl. 236—46 R **6 Claims**



1. An improvement in an electric clock thermostat having a control point selector for selecting the normal temperature to be maintained in a space when the thermostat is connected to a space conditioning temperature apparatus, a deviation selector for selecting the amount of temperature deviation desired from the normal selected temperature control point, and an electric time mechanism for selecting a certain time period during which the temperature control point deviates from the normal setting by the amount of the selected deviation, the improvement comprising,

connection means between said control point selector and said deviation selector for moving said deviation selector to a predetermined position when said control point selector is moved to a predetermined temperature setting.

4,248,376

THERMALLY-CONTROLLED VALVE

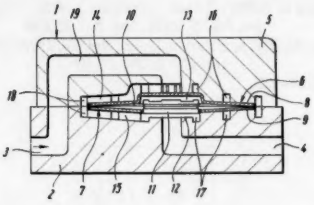
Werner Föller, Stuhr, Fed. Rep. of Germany, assignor to Gestra-KSB Vertriebsgesellschaft mbH & Co. KG, Bremen, Fed. Rep. of Germany

Filed Aug. 24, 1979, Ser. No. 69,666

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1978, 2837537

Int. Cl.³ G05D *23/12*

U.S. Cl. 236—58 **5 Claims**



1. In a valve of the type which includes a valve housing having a valve seat, a thermal control element mounted in the valve housing having a thin, rigid wall portion and a membrane member coupled peripherally with the wall portion so as to define an expansion chamber therebetween, in which an expansion medium is disposed and a locking member which is activated by the membrane for cooperative coaction with the valve seat, the improvement comprising: said valve housing having interior wall faces which define an inner chamber which substantial' corresponds in size and shape to the outer configuration of said thermal control element, said wall faces being provided with flow conduits disposed along the surface of said control element, said flow conduits being coupled to an inlet opening of said valve housing and an outlet opening defined by the opening of said locking member relative to said valve seat.

4,248,377

CONTROLLABLE HEATING MEANS FOR SMALL MASSES, PARTICULARLY THE EXPANSION MEDIUM IN HEAT SETTING APPARATUSES

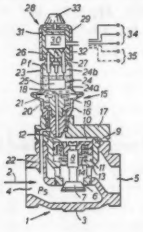
Jakob S. Jakobsen, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Nov. 1, 1978, Ser. No. 956,495

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1977, 2749251

Int. Cl.³ G05D *15/00, 23/00*

U.S. Cl. 236—68 B **6 Claims**



1. A controlled heating system, comprising, casing means defining a chamber for a medium whose temperature is controlled by the alternate application of heat thereto and the cooling thereof by the transfer of heat to the atmosphere surrounding said casing, a power transistor for heating said medium by heat emitted therefrom, said transistor being disposed

in said casing and submerged in said medium, three terminals extending from the outside of said casing to the interior thereof and being connected to the base, emitter and collector leads of said transistor, control means connected to said terminals including variable resistance means in the collector-emitter path of said transistor for controlling the heat emitted by said transistor, said control means including means for sensing the temperature of said medium by sensing the base-emitter voltage of said transistor, and amplifier means for varying the value of said variable resistance means proportionally relative to sensed changes of said base-emitter voltage.

4,248,378

SELF PRIMING DEVICES FOR INDIRECT DOMESTIC WATER HEATING SYSTEMS

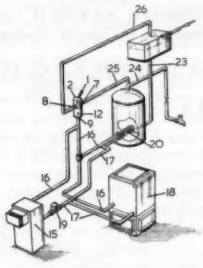
Thomas R. Carruthers, Glasgow, Scotland, assignor to Fleming Fabrications Limited, Glasgow, Scotland

Filed Feb. 6, 1979, Ser. No. 9,805

Claims priority, application United Kingdom, Jul. 13, 1978, 29725/78

Int. Cl.³ F24D *3/10*

U.S. Cl. 237—66 **4 Claims**



1. A self-priming device for indirect domestic water heating systems comprising:

a closed housing divided internally by a wall intermediate to its ends to form axially disposed first and second chambers, said first chamber being disposed below said second chamber when the device is in use;

an open-ended tubular member extending from said wall into the second chamber with its distal end adjacent the end of the second chamber to provide fluid communication between the first and second chambers;

said second chamber having an inlet and an outlet located adjacent said wall said inlet providing expansion means for a domestic hot water system into said second chamber, and said outlet providing means for venting said second chamber to atmosphere, the volume of the portion of the second chamber between the inlet and outlet and the distal end of said open-ended tubular member being substantially equal to the volume of said first chamber; and

an auto vent located adjacent the end of the first chamber remote from said wall for venting said first chamber to atmosphere, said auto vent being positioned to contact fluid present in said first chamber and including means responsive to water whereby when water is present in said first chamber said auto vent is closed and when air is present in said first chamber said auto vent is open;

said first chamber having an opening adjacent the end of said first chamber remote from said wall for placing said first chamber in fluid communication with a flow of a primary heating water.

4,248,379

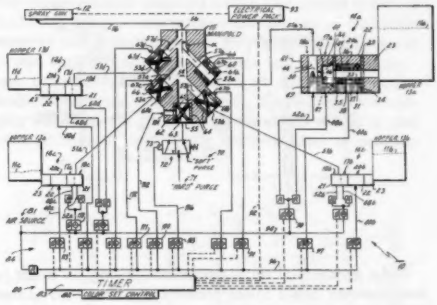
POWDER SPRAY COLOR CHANGE SYSTEM

Thomas E. Hollstein, Amherst; Gerald W. Crum, Elyria, both of Ohio, and Louis A. Frey, Greensboro, N.C., assignors to Nordson Corporation, Amherst, Ohio

Filed Aug. 16, 1979, Ser. No. 67,185

Int. Cl.³ B05B *15/02*

U.S. Cl. 239—1 **13 Claims**



1. The method of purging a powder from a pulverant powder coating system prior to initiation of a spray cycle through the system utilizing a new powder, which method comprises

directing non powder entrained air through the system at a first pressure near the pressure at which powder entrained air is customarily directed through the system, and

subsequently increasing the pressure at which the non powder entrained air is directed through the system to a second pressure is at least double that of the first pressure, and

pulsing the flow of non powder entrained air through the system at said second pressure.

4,248,380

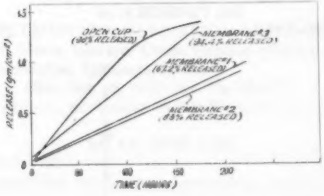
AQUEOUS-BASED AIR TREATING SYSTEMS

Ping I. Lee, Ossining, and Eduard K. Kleiner, New York, both of N.Y., assignors to Airwick Industries, Inc., Carlstadt, N.J.

Filed Dec. 27, 1977, Ser. No. 864,980

Int. Cl.³ A61L *9/04*

U.S. Cl. 239—6 **13 Claims**



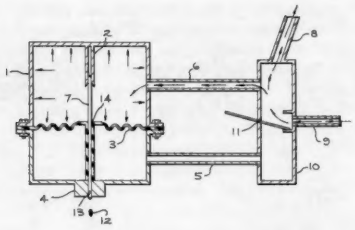
1. A dispensing system for volatile air-treating materials comprising a closed reservoir, a hydrophilic membrane having an equilibrium water content of at least about 15% forming at least a portion of the wall surface of said reservoir and being in contact with the atmosphere, and a volatile air-treating material present in aqueous medium contained in said reservoir in contact with said hydrophilic membrane; said system providing uniform release of both said water and said volatile air-treating material such that said reservoir is substantially devoid of both components at the conclusion of the release period, and substantially minimizing the fractionation among any essential oils present in said air-treating material and between the water and said essential oils.

4,248,381

AGRICULTURAL SPRAY NOZZLE WITH FLUID OPERATED ORIFICE CLEANING MEMBER

John B. Vessels, Rte. 1, Box 69, Webster, Ky. 40176

Filed Jan. 18, 1979, Ser. No. 4,617
Int. Cl.[3] B05B *15/02*
U.S. Cl. 239—118 **5 Claims**



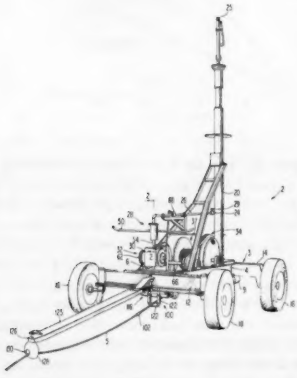
1. An agricultural spray device comprising: an upper pressure chamber and a lower pressure chamber, said chambers being divided by a diaphragm, said lower pressure chamber including a nozzle having an outlet orifice; a source of spray material; a first conduit means connecting said source with said chambers; valve means in said first conduit means for controlling the flow of material to either the upper or the lower chamber; a second conduit means connecting said upper chamber with said source for allowing material to flow out of said upper chamber to said source when said valve means is directing fluid to said lower chamber; and a punch affixed to said diaphragm, said punch having a diameter slightly smaller than said orifice and being movable in and out of said orifice so as to punch out any dirt or foreign material tending to clog said orifice, said punch also minimizing dripping when in said orifice, said punch being movable into the orifice when said valve means allows material to flow to said upper chamber, said punch being movable out of said orifice when said valve means allows flow of material to said lower chamber.

4,248,382

SPINNER TYPE WATER WINCH

J. Jearl Moore, Consolidated-Tomoka Land Co., P.O. Box 1907, Sebring, Fla. 33870

Filed Jan. 16, 1979, Ser. No. 3,806
Int. Cl.[3] B05B *3/18*
U.S. Cl. 239—189 **19 Claims**



1. A water winch for delivering water under pressure to a predetermined area while moving over a terrain to irrigate the area comprising:

(a) a frame having wheel means allowing movement of the frame across the terrain to be irrigated;

(b) a rotatable nozzle connectible to a water source for delivering water under pressure thereto;

(c) a reel for reeling in a cable rotatably mounted on said frame;

(d) drive means connecting said rotatable nozzle to said reel for rotating said reel to reel in said cable for moving said water winch over a predetermined path defined by said cable;

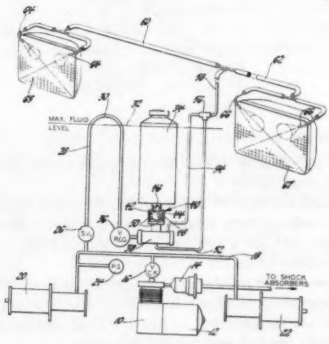
(e) said drive means including a shaft supporting said reel, a rotatable member fixed to said shaft and spaced from said reel, chain and sprocket means including a main sprocket mounted on said shaft between said reel and said rotatable member, and a clutch pin engageable with said reel, said rotatable member and said sprocket.

4,248,383

WASHER SYSTEM FOR TRANSPARENT SURFACES ON A VEHICLE

Jack W. Savage, Centerville, and Keith H. Carpenter, Kettering, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 9, 1979, Ser. No. 83,103
Int. Cl.[3] B60S *1/46*
U.S. Cl. 239—284 A **4 Claims**

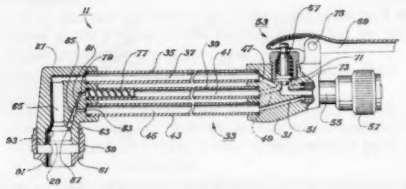


1. A vehicle headlamp washer system for use in a vehicle having a pneumatic storage chamber and means for maintaining a predetermined pressure level therein, said headlamp cleaning system comprising; headlamp nozzles, a liquid storage reservoir; a delivery chamber having a measured volume, a one-way valve permitting the gravity flow of liquid from said liquid storage reservoir to said delivery chamber; means connecting the pneumatic storage chamber and said delivery chamber including an operator controlled valve means for controlling communication between the pneumatic storage chamber and said delivery chamber; liquid passage means for delivering liquid from said delivery chamber to said headlamp nozzles in response to operation of said valve means; and pneumatic delivery passage means connected between the top of said delivery chamber and said liquid passage means and being operable to provide an air escape route from said delivery chamber through said headlamp nozzles when liquid from said liquid storage reservoir is being delivered by gravity flow through said one-way valve to said delivery chamber.

4,248,384
CUTTING TORCH HAVING INTEGRAL HEAD MIXER

Roger D. Zwicker, Arlington, Tex., assignor to Victor Equipment Company, Denton, Tex.

Filed Jul. 19, 1979, Ser. No. 59,050
Int. Cl.³ B05B *7/06*
U.S. Cl. 239—419.3 **3 Claims**



1. In a torch assembly that includes:
a. a cutting oxygen valve and passageway,
b. a mixing oxygen valve and passageway,
c. a fuel gas valve and passageway, and
d. a head having a tip end for having a tip affixed thereto and having a head passageway for cutting oxygen and respective head passageways for fuel and oxygen, the improvement comprising:
e. an integral head mixer having within said head a single preheat mixing passageway for admixing the fuel and oxygen so as to form a universal mixer without requiring special tip mixers for specific fuel gases and tip sizes and consisting essentially of having said fuel and oxygen head passageways comprised of a first oxygen passageway (**79**) drilled from said oxygen passageway end and in alignment with said oxygen passageway and intersecting a second oxygen passageway (**81**) drilled from said tip end and with a first diameter; a third fuel passageway (**83**) drilled from said fuel passageway end and in alignment with said fuel passageway; a fourth fuel and oxygen mixing passageway (**63**); said third fuel passageway (**83**) intersecting said fourth fuel and oxygen mixing passageway (**63**) such that the fuel is aspirated from said third fuel passageway by a high velocity oxygen stream into said fourth fuel and oxygen passageway; said fourth fuel and oxygen passageway being drilled from said tip end and having a common center line with said second passageway (**81**) and communicating with said second passageway and having a second diameter larger than said first diameter of said second passageway such that said oxygen has a high velocity and aspirates said fuel from said third fuel passageway (**83**) into said fourth fuel and oxygen passageway (**63**); and a fifth mixing passageway (**87**) drilled from said tip end and having a common center line with said second and fourth passageway and communicating with said second and fourth passageway and having a third diameter larger than said second diameter of said fourth passageway so as to afford a low velocity mixing region for substantially uniform admixing of said fuel and oxygen before entering said tip end and having two respective sealing seating surfaces intermediate said fifth mixing passageway (**87**) and, respectively, said cutting oxygen passageway and said tip end such that only two sealing seating surfaces are necessary for sealingly receiving said tip.

4,248,385
ADJUSTABLE NOZZLE

Frederick R. Hickerson, R.D. 6, Box 602, Newton, Sussex County, N.J. 07860

Filed Dec. 3, 1979, Ser. No. 99,399
Int. Cl.³ B05B *1/12, 1/30*
U.S. Cl. 239—444 **8 Claims**

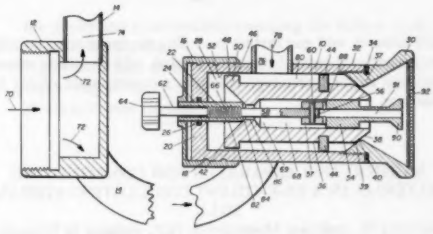
1. An adjustable nozzle for regulating high pressure liquid which comprises:

a cylindrically shaped nozzle body member having an internally threaded fore end, partially closed externally threaded aft end, said aft end having a sleeve hole axially positioned therethrough which communicates with a central cavity;

nozzle means threadedly attached to said fore end of said nozzle body member for controlling spray pattern and flow rate of said high pressure liquid passing therethrough;

piston means, slidable disposed within said central cavity of said body member intermediate said aft end of said body member and said nozzle means for regulating the flow rate of said high pressure liquid through said nozzle means;

means threadedly attached to said aft end of said nozzle body member and slidably passing therethrough for variably adjusting the position of said piston means in said central cavity of said nozzle body member to independently control said flow rate and for axially supporting means for independently adjusting a spray pattern of said high pressure liquid passing through said nozzle means;



"O" ring means operatively located in said sleeve hole of said aft end of said nozzle member, said "**0**" ring means preventing loss of liquid from said nozzle body member when said means for variably adjusting the flow rate and the spray pattern slidably passes through said aft end of said nozzle body member; and

hose connecting means fixedly attached to said nozzle body member and communicating with said nozzle body member central cavity for supplying high pressure liquid to said nozzle body member from a plurality of inlets, and for providing means for conveniently holding said adjustable nozzle while adjusting said liquid flow rate and said spray pattern.

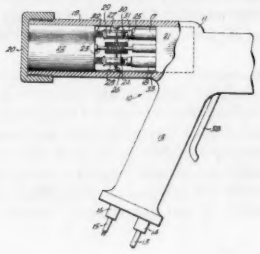
4,248,386
ELECTROSTATIC DEPOSITION APPARATUS

Charles W. Morle, Gerrards Cross, England, assignor to Ransburg Corporation, Indianapolis, Ind.

Filed Oct. 16, 1978, Ser. No. 951,571
Claims priority, application United Kingdom, Oct. 31, 1977, 45196/77
Int. Cl.³ B05B *5/00*
U.S. Cl. 239—707 **14 Claims**

1. A hand-held electrostatic deposition gun including a body, means for supplying deposition material to the gun and for discharging the material from the gun in atomized form, a high voltage electrode for establishing an electrostatic field between the gun and the article on which material is to be deposited, for electrostatically charging the material and promoting the deposition of the material on the article, wherein said gun includes means on said body for generating high voltage for application to said electrode, said high voltage generating means including a piezoelectric element, means for supplying energy to said gun to cause said element to be stressed and thereby develop pulses of high voltage, and means for rectifying and smoothing said high voltage pulses to produce a unidirectional high voltage for application to said electrode, means for utilizing such energy for imparting mechanical impulses to said piezoelectric element, said mechanical

impulse imparting means including a motor, energy storage means for storing energy from the output of said motor and for periodically releasing the stored energy to apply impulses to



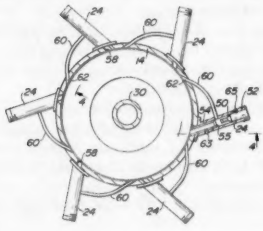
said element, said gun further including air operated atomizing means and said motor being air operated, said atomizing means and said motor being supplied from a common air supply to said gun.

4,248,387

METHOD AND APPARATUS FOR COMMINUTING MATERIAL IN A RE-ENTRANT CIRCULATING STREAM MILL

Norwood H. Andrews, Moorestown, N.J., assignor to Norandy, Inc., Moorestown, N.J.

Filed May 9, 1979, Ser. No. 37,253
Int. Cl.³ B02C *19/06*
U.S. Cl. 241—5 **14 Claims**



1. Apparatus for comminuting material to a finely divided form, comprising:

a re-entrant circulating stream comminuting mill,

said comminuting mill including a chamber having a generally annular peripheral wall,

a plurality of spaced gaseous fluid means for discharging gaseous fluid streams through said wall into said chamber with both a component of movement forward in the direction of circulation and a radial component of movement relative to a central axis of said peripheral wall to form a circulating vortex in said chamber,

said gaseous fluid means comprising, in tandem, a gaseous pressure nozzle for accelerating the gaseous fluid, and acceleration tube means for directing the accelerated gaseous fluid into said chamber.

transfer means for transferring circulating fluid and entrained material from said chamber directly to each junction of said pressure nozzle and acceleration tube means whereby said circulating fluid and entrained material are drawn to said junction by the difference in pressure between said junction and the chamber and is thereafter accelerated within said acceleration tube means and projected back into said chamber,

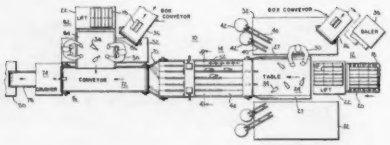
and material feed means and material outlet means for said mill.

4,248,388

APPARATUS FOR CANCELLING NON-REFILLABLE GLASS BOTTLES

Michael T. King, 1105 Indianwood Dr., Brookfield, Wis. 53005

Filed Sep. 24, 1979, Ser. No. 78,650
Int. Cl.³ B02C *4/02*
U.S. Cl. 241—99 **16 Claims**



1. Apparatus for cancelling non-reusable bottles comprising:

an unloading section having material handling means for receiving containers of bottles and positioning same for unloading and a moving belt onto which the bottles are unloaded from the containers;

a counting section for receiving bottles from said moving belt, said counting section having a plurality of adjacent moving belts extending along said section between pairs of spaced divider plates running parallel to the direction of movement of said adjacent belts, said divider plates and belts forming a plurality of counting channels for receiving and aligning the bottles and along which the bottles pass in seriatim on said adjacent moving belts, said belts being canted about their direction of movement to cause said bottles to assume defined positions in said counting section, said counting section having counting means for counting the bottles passing in said defined positions in said counting channels; and

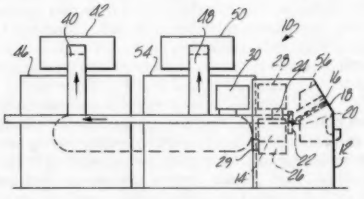
a crusher section for receiving the bottles from said channels and for cancelling same by crushing, said crusher section including storage means for the crushed glass of said bottle.

4,248,389

CONTAINER SORTING AND HANDLING SYSTEM

Fremont G. Thompson, 6740 Commerce Rd., Orchard Lake, Mich. 48033; Lewis P. Vogel, 6375 Werkner Rd., Chelsea, Mich. 48118, and Eugene R. Wagner, 663 Thayer, Northville, Mich. 48167

Filed Jan. 15, 1979, Ser. No. 3,349
Int. Cl.³ B07C *5/00*
U.S. Cl. 241—101.5 **6 Claims**



1. A system for sorting diverse types of containers, each container having a code imprinted thereon, said system comprising:

a housing having a sorting station formed therein;

an elongated feed chute formed in the housing, said feed chute having one end open exteriorly of the housing and its other end open to the sorting station so that a user can manually insert diverse containers into the feed chute and to the sorting station;

stop gate means operatively connected with said feed chute for permitting only a single container to enter the sorting

station at a particular time, said stop gate means being positioned adjacent the sorting station so that a plurality of containers can be simultaneously positioned in the feed chute;

at least two conveying means for transporting containers from said sorting station, each conveying means being adapted to transport a predetermined type of diverse container;

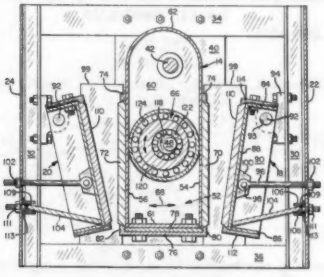
means at said sorting station for reading the code on a container at the sorting station and for producing an output signal representative of the code;

means responsive to said reading means output signal for identifying the type of container;

indexing means responsive to said identifying means for displacing a container from the sorting station and directly to one of said conveying means in dependence upon the type of the container; and

ejector means responsive to said identifying means for ejecting a container to the outside of said housing when the container is none of said predetermined type of diverse container.

4,248,390
ROCK CRUSHING MACHINE WITH ROTARY ECCENTRIC JAW DRIVING MECHANISM
Nicolle A. Toole, 1235 SW. 2nd Ave., Ontario, Oreg. 97914
Filed Jan. 23, 1979, Ser. No. 5,726
Int. Cl.³ B02C *1/06*
U.S. Cl. 241—263 **17 Claims**



1. A drive mechanism for reciprocating a movable jaw of a rock crusher in a substantially linear direction toward and away from a stationary jaw of the crusher comprising:

rotatable cam shaft means coupled to said movable jaw;

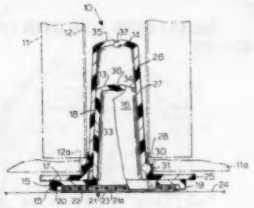
eccentric means movable relative to said cam shaft means and relative to said movable jaw for taking up motion of said cam shaft means such that said movable jaw reciprocates substantially in said one direction when said cam shaft means rotates.

4,248,391
HOLDER FOR ROLLS OF PAPER
Virginia V. Ness, 57 W. Shore Rd., Belvedere, Calif. 94920
Continuation-in-part of Ser. No. 948,694, Oct. 5, 1978. This application Jun. 18, 1979, Ser. No. 49,235
Int. Cl.³ B65H *19/00*
U.S. Cl. 242—55.54 **18 Claims**

9. A two-piece paper towel roll holder, including in combination:

a stationary base member of high-impact plastic having an annular rim surrounding a central hollow frustoconical projection, said rim having an upper surface on the same side as said projection,

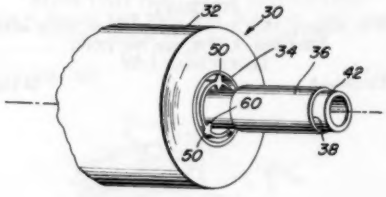
a rotatable member of high-impact plastic having an annular rim surrounding a central hollow projection that nests around the outer surface of the hollow projection of said base member in surface engagement therewith and is rotatable with respect thereto, said rim having a lower surface facing the upper surface of said base member's rim, the outer surface of said projection of said rotatable member being frustoconical and comprising retention means



for firmly and non-rotatably engaging the hollow core of a paper towel roll,

whereby said base member can be secured to a stationary supporting surface and said rotatable member is rotatable about said base member.

4,248,392
APPARATUS FOR APPLICATION OF PLASTICS STRETCH FILMS
John C. Parry, 6729 Brookmont Dr., Baltimore, Md. 21207
Filed Dec. 18, 1979, Ser. No. 104,847
Int. Cl.³ B65H *17/44*
U.S. Cl. 242—96 **12 Claims**



1. An apparatus for applying plastics stretch films for packaging units, comprising:

a core for a roll of plastics stretch film said core consisting of a hollow cylindrical tube-like structure;

a pair of insertable adapters for extending said core, said insertable adapters being inserted in the opposite ends of said hollow cylindrical tube-like structure, each said adapter consisting of a cylindrical core having a portion of the external surface of one end of each said cylindrical core covered with a rubber-like material, the end of each said cylindrical core having a portion covered with rubber-like material removably affixed to the inside diameter of said core; and

a pair of flexible hand grips removably encircled about said insertable adapters for control of the tension on plastics stretch film on said core while unrolling during manual applications for packaging.

4,248,393

CASSETTE TAPE STORING CASE

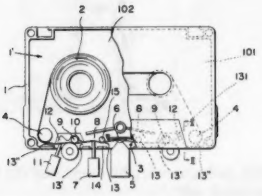
Toshio Mogi, Ayaseshi, Japan, assignor to Lux Audio Kabushiki Kaisha, Toyonakashi, Japan

Filed Jul. 16, 1979, Ser. No. 57,677

Claims priority, application Japan, Jul. 27, 1978, 53-104162[U]

Int. Cl.[3] G03B *1/04*; G11B *15/32*

U.S. Cl. 242—199 **10 Claims**



1. A cassette case for containing a magnetic tape, comprising:

a main body having two parallel side walls defining an inner chamber therebetween for containing a magnetic tape, and having a front wall with a tape opening therein; and

a plurality of front guide means positioned along side said tape opening in the direction of movement of a tape past said opening and each having a tape aligner for contacting the magnetic tape in the direction of the width of the tape for guiding the tape over recording and reproducing heads in a recording-reproducing apparatus in which said cassette case is positioned, the tape aligner in at least one of said front guide means having a guide member with a surface which is for contacting the magnetic tape and said guide member being adjustably movable for moving said tape contacting surface to a position inclined to a line perpendicularly intersecting said two parallel said walls and maintaining it in said inclined position so as to adjust the position of the guided tape relative to the heads in the recording-reproducing apparatus.

4,248,394

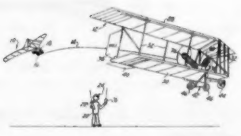
REMOTE CONTROL HANG GLIDER TOWING AIRCRAFT

Marlin K. Klumpp, 1520 Avondale, Ann Arbor, Mich. 48103

Filed Mar. 5, 1979, Ser. No. 17,411

Int. Cl.[3] B64D *3/00*

U.S. Cl. 244—3 **13 Claims**



1. A pilotless powered aircraft for towing a piloted motorless aircraft by means of a towline, said pilotless powered aircraft comprising a lifting surface, a yaw control surface and a pitch control surface, a thrust-providing power unit attached to said lifting surface, and a radio control receiver for operating said thrust-providing power unit, said yaw control surface and said pitch control surface as a function of command signals remotely transmitted from the ground by means of a radio transmitter, and means under the control of the pilot of said piloted motorless aircraft for releasing said towline, wherein the range of minimum to maximum flying speed of one of said aircraft overlaps substantially the range of minimum to maximum flying speed of the other of said aircraft, wherein said towline is stressed to break as a result of a pulling force exerted thereon in the range of about 1.5 to 3 times the maximum thrust exerted by said thrust-providing power unit, and wherein said piloted motorless aircraft is a hang glider and the lifting surface of said pilotless powered aircraft is a hang glider.

9. A method of towing a piloted motorless aircraft by means of a powered aircraft provided with a thrust-providing power unit, said method comprising connecting said powered aircraft to said piloted motorless aircraft by means of a releasable towline, towing said piloted motorless aircraft to altitude by said powered aircraft, controlling said powered aircraft from the ground by means of a remote radio-controlled link, and releasing said towline from said piloted motorless aircraft when reaching an appropriate altitude, said releasing of said towline being effected by the pilot of said piloted motorless aircraft, wherein the range of minimum to maximum flying speed of one of said aircraft overlaps the range of minimum to maximum flying speed of the other of said aircraft and said towline is arranged to break upon a pull exerted thereon which is about 1.5 to 3 times the pull exerted by said powered aircraft power unit and wherein said piloted motorless aircraft is a hang glider and said powered aircraft has a hang glider lifting surface equipped with said thrust-providing power unit.

4,248,395

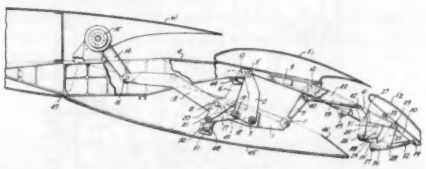
AIRPLANE WING TRAILING-EDGE FLAP-MOUNTING MECHANISM

James B. Cole, Mercer Island, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 780,711, Mar. 24, 1977, abandoned, which is a continuation of Ser. No. 561,096, Mar. 24, 1975, abandoned. This application Jul. 3, 1978, Ser. No. 921,474

Int. Cl.[2] B64C *9/20*

U.S. Cl. 244—216 **17 Claims**



1. Mounting mechanism for an airplane wing trailing-edge flap, comprising a cantilever supporting beam projecting rearwardly from the airplane wing, first link means pivotally connected to said beam, a carrier member elongated fore and aft and having a pivotal connection at a location between its forward and aft ends to a portion of said first link means shiftable relative to said beam, and second link means having two links pivotally connected to said carrier member at locations fore and aft, respectively, of said pivotal connection between said carrier member and said first link means, portions of said two links being swingable relative to said carrier member, said swingable portions of said two links being pivotally connected to the flap, and control means connecting said carrier member to the wing for shifting said carrier member relative to the wing.

4,248,396

METHOD AND APPARATUS FOR DETECTING RAILROAD CARS

Thomas J. Hunt, Jr., Medford Lakes, N.J., assignor to Siemens Corporation, Iselin, N.J.

Filed Jul. 26, 1979, Ser. No. 60,927

Int. Cl.[3] B61L *25/04*

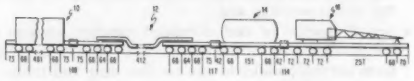
U.S. Cl. 246—247 **15 Claims**

1. Apparatus for identifying individual railroad cars among a train of railroad cars arranged on a track, wherein each car has two weight-bearing wheel trucks disposed beneath and at opposite ends thereof, each of said trucks having at least two axles arranged adjacent to each other such that the maximum

distance between the axles of a single truck is less than the center distance between facing axles of the two trucks of a respective car, said apparatus comprising, in combination:

(a) means for measuring the distance between successive axles as a train of cars moves in one direction along the track;

(b) means, coupled to said distance measuring means, for comparing each measured distance with the maximum axle distance for a truck; and



(c) means, coupled to said comparison means, for determining whether the axle spacing of a first truck equals the axle spacing of a second truck after the maximum axle distance for a truck has been exceeded;

whereby an individual car is identified upon identification of two identical truck assemblies which are separated by an axle spacing that is greater than said maximum axle distance.

4,248,397

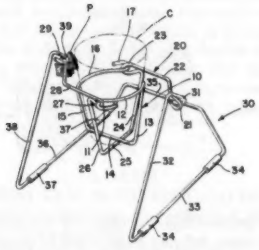
CUP HOLDER

Raymond C. Casper, 2541 21st St., Cuyahoga Falls, Ohio 44223

Filed Jan. 17, 1979, Ser. No. 4,147

Int. Cl.³ A47F *5/12*

U.S. Cl. 248—138 **17 Claims**



1. Apparatus for maintaining liquid in a cup or the like while travelling in a vehicle comprising holding means of a continuous wire construction shaped to grasp and confine the cup, said holding means terminating on both ends in a hook portion, support means of a continuous wire construction having two internal loops to accept said hook portions of said holding means in order to carry said holding means and permit rotation of said holding means on a first axis defined by said hook portions on said holding means and said internal loops on said support means, said support means terminating on both ends in a hook portion, and stand means adapted to engage a portion of the vehicle, said stand means including two pivot points positioned in order to accept said hook portions of said support means and permit rotation of said support means on a second axis which is defined by the pivot points on said stand means and the hook portions of said support means, said second axis being approximately ninety degrees of said first axis so that the cup is free to act under its own inertia to maintain the liquid in the cup.

4,248,398

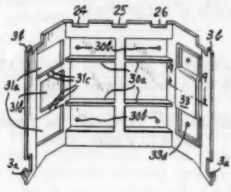
WALL MOUNTED FLUID DISPENSER

John S. Doyel, 404 W. 20th St., New York, N.Y. 10011

Division of Ser. No. 832,731, Sep. 12, 1977, abandoned. This application Feb. 7, 1979, Ser. No. 10,031

Int. Cl.³ A47K *1/08*

U.S. Cl. 248—220.1 **8 Claims**



1. A wall mounting bracket comprising:

a central wall member;

first and second side wall means, respectively connected to the opposite sides of said central wall member and having flat rear surfaces lying in respective planes disposed substantially at right angles to each other, for attachment to flat wall surfaces, said first and second side wall means each comprising:

means defining upper and lower apertures having a central partition disposed between them with at least a portion of said flat rear surface thereon;

adjusting means, having upper and lower flat plates lying in the same plane and connected by an intermediate partition, for cooperatively engaging said defining means with said flat plates extending through said apertures; and

cooperating pivot means on said central partition and said intermediate partition for orienting said adjusting means about a substantially vertical axis with respect to said defining means whereby the plane of said flat plates is disposed at an angle with respect to the plane of said flat rear surface.

4,248,399

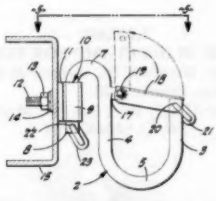
HOOK UNIT FOR TRUCK TIRE CHAINS

Donald G. Gipson, 1448 Vista Way, Red Bluff, Calif. 96080

Filed Nov. 9, 1978, Ser. No. 959,379

Int. Cl.³ E05B *73/00*

U.S. Cl. 248—552 **7 Claims**



1. A truck tire chain hook unit comprising a bracket, the bracket being adapted to be secured on and in abutment with a fixed member of a truck, an upstanding socket rigid with the bracket and disposed wholly outwardly of said abutment, an upwardly opening hook projecting outwardly from the socket, the hook including an outer shank and an inner shank, said shanks being horizontally spaced, an integral extension of the inner shank providing an attachment leg, the attachment leg being non-circular in cross section and detachably engaged in the socket, the socket having an open-ended bore of like cross sectional configuration which receives the attachment leg in matching non-turnable relation whereby the hook is laterally immovable, the attachment leg engaging in the open-ended

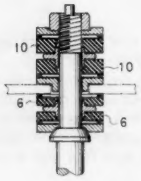
socket from one end thereof and projecting beyond the other end thereof, and said projecting end portion of the attachment leg having a hole formed therein for the reception of a bail of a padlock; the extension, which provides the attachment leg, upstanding from the upper end of the inner shank whereby said attachment leg engages in the open-ended socket from below, with said projecting portion, and the hole therein, disposed above the upper end of the socket, and means between the socket and attachment leg detachably securing the latter in the socket independently of the padlock.

4,248,400

OIL DAMPER FITTING APPARATUS

Tatsuya Takagi, 6-10, Araebisumachi, Nishinomiya-shi, Hyogo-ken, Japan

Filed Jan. 30, 1979, Ser. No. 7,846
Int. Cl.³ F16M *5/00*
U.S. Cl. 248—635 **11 Claims**



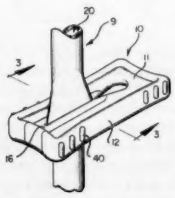
1. A support mounting for a rod subjected to limited reciprocation comprising:
a support frame including an opening in which said rod is inserted;
a shoulder portion formed on said support rod;
a lowermost seat adapted to mate with said shoulder portion;
at least one lower bushing operatively disposed between said lowermost seat and said opening in said support frame;
an upper flange mounted as a sleeve within said opening in said support frame, said upper flange being in slideable engagement with said rod;
at least one upper bushing operatively disposed between said upper flange and an upper seat secured to said rod by a fastening means; and
said upper bushing having an elastic constant larger than said lower bushing and said fastening means being initially fastened to contract said upper bushing by the middle stroke of shearing deflection and the lower bushing being contracted by approximately the full stroke of shearing deflection.

4,248,401

PLASTIC SLIDE CLAMP FOR TUBING

Herbert Mittleman, Deerfield, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed May 7, 1979, Ser. No. 36,624
Int. Cl.³ F16K *7/04*
U.S. Cl. 251—7 **11 Claims**



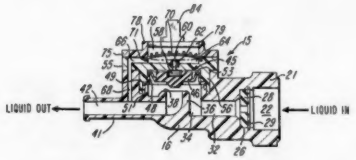
1. A plastic slide clamp for fluid tubing comprising:
an elongated member including a center platform having an outer border of greater thickness than the thickness of said center platform forming longitudinal sides and transverse ends;
a slot dimensioned and positioned within said center platform which tapers longitudinally to a narrow transverse portion and thereafter having substantially parallel sides to define a crimping slot to crimp and to close a fluid passageway of the tubing;
rounded crimping surfaces having a rounded, transverse cross section as defined by said parallel sides of said crimping slot in said center platform, for crimping the tubing in the closed position; and
a central portion of said elongated member wherein said longitudinal sides of the outer border of said center platform are not parallel to one another near said transverse ends, the configuration of said longitudinal sides and the relative thickness of said longitudinal sides and of said center platform coact to provide continuous inwardly directed spring-like compression when the tubing is crimped to thereby compensate for cold flow of the tubing,
whereby said elongated member may be easily moved transversely to the tubing to repeatedly open and close, and to effectively close the fluid passageway of the tubing over a period of time.

4,248,402

PILOT OPERATED FLUID CONTROL VALVE

Alan F. Meckstroth, 2357 Shelterwood Dr., Dayton, Ohio 45409

Filed Feb. 12, 1979, Ser. No. 11,227
Int. Cl.³ F16K *31/385, 31/40*
U.S. Cl. 251—11 **9 Claims**



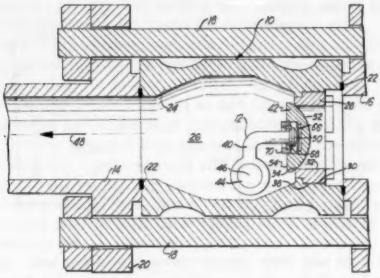
1. A pilot operated liquid control valve comprising a valve body having means defining an inlet and an outlet with a valve seat therebetween, a flexible diaphragm valve member having an outer portion supported by said valve body and a movable inner portion cooperating with said seat to control the flow of liquid from said inlet to said outlet, means defining a bleed hole for directing a limited flow of liquid from an inlet chamber on one side of said diaphragm valve member to a second chamber on the other side of said valve member, means defining a vent passage for directing liquid from said second chamber around at least said inner portion of said diaphragm valve member to said outlet and providing for the release of liquid flowing through said bleed hole, a flexible control member disposed adjacent said vent passage and flexible between an open position permitting the flow of liquid through said vent passage into said second chamber and a closed position blocking the flow of liquid through said vent passage, means for sealing said control member to prevent the liquid within said second chamber from contacting an outer portion of said control member, and electrically operated means disposed adjacent said outer portion of said control member for flexing said control member to effect movement between said closed and open positions.

4,248,403

PLUG ASSEMBLY FOR MOVABLE PLUG VALVES

William L. Scull, Rockaway Township, Morris County, N.J., assignor to Leslie, Co., Parsippany, N.J.

Filed Jan. 8, 1979, Ser. No. 1,963
Int. Cl.³ F16K *25/00*
U.S. Cl. 251—85 **16 Claims**



1. A plug assembly for seating against a valve seat in a conduit, said plug assembly being useable in a movable plug valve which controls the flow of fluid through the conduit, said plug assembly comprising:

an arm having an enlarged head;

a plug member having a front face for sealingly engaging the valve seat and a rear face, said plug member including a recessed opening in one of said front and rear faces for receiving and retaining said head for relative movement with respect thereto, said recessed opening including a first bore, a second bore of lesser diameter than said first bore, and a shoulder defined therebetween, and said head being disposed in said first bore;

a flexible planar spring disc disposed in said first bore in engagement with said shoulder; and

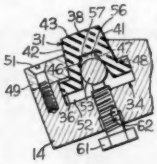
retaining means connected to said plug member adjacent the ends of said first bore opposite from said shoulder for retaining said head in said first bore in engagement with said flexible planar spring disc, said flexible planar spring disc being normally flexed to urge said head and said retaining means into engagement to normally prevent relative movement between said plug member and said head.

4,248,404

DUAL SEAL BUTTERFLY VALVE

Holliday L. Goldman, Red Lion, Pa., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Aug. 9, 1979, Ser. No. 65,222
Int. Cl.³ F16K *1/22*
U.S. Cl. 251—307 **1 Claim**



1. In a butterfly valve having a valve body presenting a flow through passageway therein;

a spherical segment contour in the flow through passageway of the valve body;

a valve disc supported within the spherical segment contour in the fluid flow through passageway in the valve body for movement to a closed position to block fluid flow through the passageway or to an open position to permit the flow of fluid through said passageway, said valve disc having a concave upstream face surface and a concave downstream face surface to provide flow surfaces offering minimum resistance to fluid flow through passage when the valve disc is open;

a valve seal receiving groove in the peripheral edges of the concave edge surfaces of said valve disc, said valve seal receiving grooves being formed to present circular inwardly located capture grooves;

a valve seal of a non-elastomer material having exterior inclined wall surfaces terminating to form a relatively flat sealing surface adapted to engage the spherical contoured segment in the fluid flow through passageway, said valve seals also having circular radially outwardly entending bottom flange portions, said valve seals also being provided with a backside circular groove which in cross section presents a truncated triangle configuration having side walls so as to render said seals more readily deformable;

a split metallic ring of stainless steel material having continuous continuity disposed within said backside groove of each of said valve seals in contact only with the tapered side walls without fully entering the truncated groove and operable to exert a radial outwardly acting force on the side walls of said valve seals thereby causing the relatively flat contacting surface of said valve seals into intimate sealing engagement with the spherical contour segment surface of said fluid flow through passageway in said valve body;

a plurality of force applying screws threadedly engaged in the peripheral edges of said valve disc and in position to engage said split metallic ring to apply a force thereto to expand said metallic ring to thereby adjust the seal pressure of valve seals; and

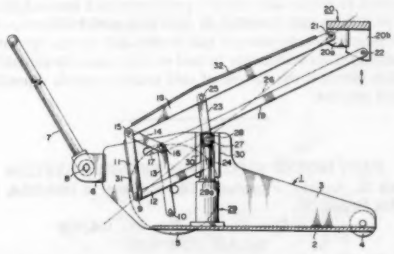
a single removable retainer ring for each valve seal operative to secure its associated valve seal within the associated groove in said valve disc in fluid sealing contact with the wall of the fluid flow through passageway in said valve body when said valve disc is in a closed position.

4,248,405

LIFTING JACK

Tamotsu Kameda, 2594-5 Omiya, Fujinomiya-shi, Japan

Filed Dec. 17, 1979, Ser. No. 104,041
Claims priority, application Japan, Dec. 22, 1978, 53-160760
Int. Cl.³ B66F *5/02*
U.S. Cl. 254—10 B **7 Claims**



1. A lifting jack, comprising:

a chassis having;

a pair of horizontally spaced parallel and vertical side plates, a set of wheels spanning said chassis at each end of said side plates, and a transverse brace member connecting said side plates,

a lifting means mounted on said chassis,

an elevating linkage having;

a lifting head as its first link, upper and lower swing arms as its second and fourth links, and a third link member, a pivot pin connecting said third and fourth links being guided by an arcuate slot provided in each of said side plates,

a second parallelogram linkage having;

a first link member common to said third link of said elevating linkage, and second and fourth link members connected thereto, third link member being in a body with said chassis, and

a third parallelogram linkage having;

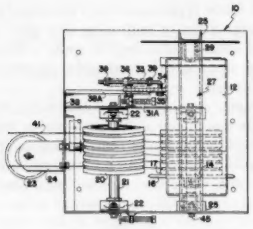
its first link member formed by a certain length of said third link member of said elevating parallelogram linkage, a second link member in a body with said second link member of said second parallelogram linkage, a third link member, and a fourth link member guided by a guide means in its intermediate point lying on a line connecting a pivot pin between said first and second link members of said first elevating parallelogram linkage and a pivot shaft between said second and third link members of said third parallelogram linkage.

4,248,406

BARN SCRAPER DRIVE ASSEMBLY

Frank R. Laurenz, Eagle Butte, S. Dak., assignor to Agricultural Research & Development, Inc., Eagle Butte, S. Dak.

Filed Apr. 2, 1979, Ser. No. 26,209
Int. Cl.³ C02F 5/02
U.S. Cl. 254—274 **14 Claims**



1. A drive assembly for equipment such as barn scrapers and the like which include supporting framework, an electric motor mounted in said framework and drive means operatively connecting said motor to said equipment; comprising in combination means to mount said motor in said framework for partial rotation substantially axially of said motor and responsive to an increase in torque of said motor, adjustable means extending between said motor and said framework to adjust the torque required to rotate said motor a predetermined amount, electrical switch means mounted in said framework to control the operating characteristics of said motor and means operatively extending from said motor to said switch means to actuate said switch means if the torque of said motor exceeds a predetermined amount.

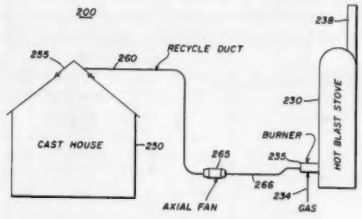
4,248,407

CAST HOUSE EMISSIONS RECYCLE SYSTEM

Frank K. Armour, Flossmoor, Ill., assignor to Interlake, Inc., Oak Brook, Ill.

Filed Dec. 21, 1979, Ser. No. 106,088
Int. Cl.³ F24F 9/00
U.S. Cl. 266—156 **28 Claims**

1. A cast house emissions recycle system comprising a blast furnace having an inlet communicating with the interior of said blast furnace, a plurality of hot blast stoves adjacent to said blast furnace and having inlets for cold air and inlets for fuel and having outlets for hot air communicating with the inlet of said blast furnace and outlets for combustion gases communicating with the atmosphere, said blast furnace having a metal tap hole and runner for withdrawing molten metal therefrom and pouring it into an associated hot metal ladle, a cast house including a housing surrounding and enclosing at least the lower portion of said blast furnace and surrounding and enclosing said metal tap hole and said runner and the associated hot metal ladle, collecting structure associated with said housing for collecting the emissions from the withdrawing of molten



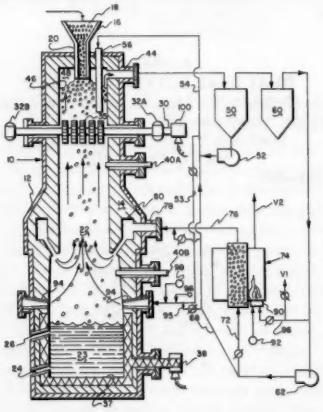
metal from said blast furnace through said tap hole and the conveying of the molten metal along said runner and into the associated hot metal ladle, and a blower having an inlet duct communicating with said collecting structure and an outlet duct communicating with one of said inlets to said hot blast stoves for conveying the emissions from said housing to said hot blast stoves.

4,248,408

METHOD AND APPARATUS FOR REDUCING PARTICULATE IRON OXIDE TO MOLTEN IRON WITH SOLID REDUCTANT AND OXY-FUEL BURNERS

Donald Beggs, Charlotte, N.C.; Bruce G. Kelley, Fort Mill, S.C., and David C. Meissner, Charlotte, N.C., assignors to Midrex Corporation, Charlotte, N.C.

Continuation-in-part of Ser. No. 892,564, Apr. 3, 1978, Pat. No. 4,179,278, which is a continuation-in-part of Ser. No. 769,242, Feb. 16, 1977, Pat. No. 4,083,543. This application Jul. 25, 1979, Ser. No. 60,691
Int. Cl.³ F27B 1/08
U.S. Cl. 266—156 **9 Claims**



1. Apparatus for reducing particulate iron oxide to molten iron with a solid reductant, said apparatus comprising:

a. a generally vertical shaft furnace having a particle introducing means at the top thereof for establishing a gravitationally descending burden therein, a molten iron collec-

tion chamber at the bottom thereof, and molten iron removal means;

b. means for passing an electric current through said burden by electric resistance heating, including an exterior source of electric power;

c. a gas outlet in the upper region of said furnace for removing top gas;

d. means external to said furnace for cooling and cleaning removed top gas, said cooling and cleaning means communicating with said means for removing top gas;

e. means communicating with said top gas cooling and cleaning means and with the interior of said furnace above said molten iron collection chamber for introducing said cooled and cleaned top gas to said furnace between said gas outlet and said molten iron collection chamber; and

f. at least one oxy-fuel burner in said shaft furnace between said molten metal collection chamber and said means for introducing cooled and cleaned top gas to said furnace, whereby said oxy-fuel burner provides heat for melting of reduced iron as well as a supplemental source of hot reducing gas.

4,248,409

STEEL FURNACE NOZZLE ARRANGEMENT

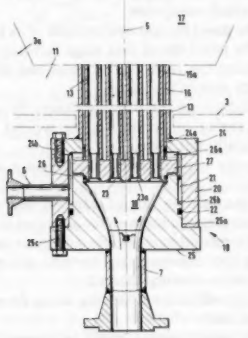
Karlheinz Langlitz, Mülheim, and Günter Schmitz, Duisburg, both of Fed. Rep. of Germany, assignors to Mannesmann Demag A.G. Wolfgang-Reuter-Platz, Duisburg, Fed. Rep. of Germany

Filed Oct. 3, 1979, Ser. No. 81,464

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1978, 2845004

Int. Cl.³ C21B 7/16

U.S. Cl. 266—268 **12 Claims**



1. A unitary nozzle structure for simultaneously connecting a plurality of blast pipes into a steel manufacturing furnace comprising

(a) a plurality of annular blast pipes defining in their interiors primary material feeding areas,

(b) a feeding pipe connecting said plurality of blast pipes and said primary material feeding areas to a first source of additives; the improvement characterized by

(c) said plurality of blast pipes mounted together in parallel fashion to form a unitary bundle;

(d) a tubular jacket surrounding said bundle;

(e) the areas located between the outer peripheries of said blast pipes defining secondary material feeding areas for said furnace separate from said primary material feeding areas;

(f) a second source of additives; and

(g) means connecting said second source of additives to said secondary material feeding areas.

4,248,410

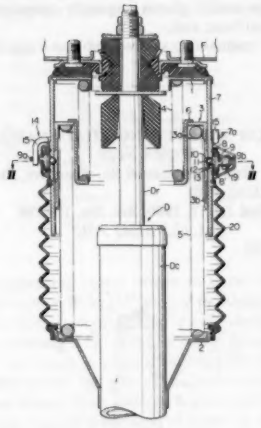
SUSPENSION SPRING DEVICE FOR A MOTOR VEHICLE

Shoichi Sano, Tokorozawa, and Kunitaka Furuya, Kamifukuoka, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 14, 1979, Ser. No. 48,466

Int. Cl.³ F16F 1/12

U.S. Cl. 267—60 **4 Claims**



1. A suspension spring system for moderating the relative motion between a vehicle body and its wheel supporting members, comprising:

(a) a first suspension coil having an upper end in abutment with said vehicle body;

(b) a second suspension coil having a lower end in abutment with said wheel supporting members;

(c) a spring retaining member disposed between said first and second coils and connecting said coils in series relation; and

(d) locking means actuable to lock said spring retaining member against movement relatively to said vehicle body for eliminating the spring constant of said first coil.

4,248,411

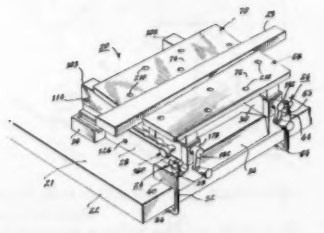
APPARATUS FOR SUPPORTING A WORK PIECE

Robert P. Wagster, Greensboro, Md., and Carl H. Onken, Jr., Middletown, Ohio, assignors to Black and Decker, Inc., Towson, Md.

Filed May 15, 1979, Ser. No. 39,243

Int. Cl.³ B23Q 1/04

U.S. Cl. 269—67 **20 Claims**



1. A portable worktable comprising:

(a) a generally frame shaped worktable support base;

(b) first and second elongated table members each having a

planar work support surface for supporting and gripping a workpiece therebetween.

(c) first and second elongated, rectilinear extending table support members for supporting said table members on said base;

(d) means for varying the relative position between said table members in a work plane;

(e) means for pivotally mounting said table support members at end segments thereof to said support base for selectably positioning said work table in a plane substantially parallel to said base and in planes angularly orientated with respect to said base; and,

(f) means for maintaining said wortable at a selected orientation.

4,248,412

SUPPORT FOR SHARPENING CHAIN SAWS AT THE WORK SITE

Leonce DeRoy, 3464 Saint-Samuel St., Beauport, Prov. of Quebec, Canada (G1C 3T8)

Filed Jan. 7, 1980, Ser. No. 109,788

Int. Cl.³ B23Q *3/02*

U.S. Cl. 269—102 **3 Claims**

1. A support for sharpening a chain saw comprising an L-shaped rigid member having a horizontal arm and a vertical arm; said horizontal arm being provided with a threaded spike secured to its underside and a rigidly secured clamping means on its top surface adapted to detachably hold fast the blade of a chain saw; further comprising an outwardly, longitudinally projecting rigid support member secured to said vertical arm to support the handle or safety guard of a chain saw in upside down position.

4,248,413

SHEET STACKING APPARATUS

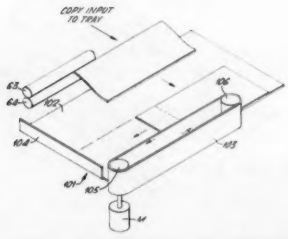
John Fox, Newport Pagnell, England, assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 27, 1978, Ser. No. 963,866

Claims priority, application United Kingdom, Nov. 30, 1977, 49817/77

Int. Cl.³ B42B *2/00*

U.S. Cl. 270—53 **11 Claims**



1. Sheet stacking and aligning apparatus comprising a support surface inclined downwardly from the horizontal towards a first registration stop in the form of an endless belt extending across said support surface and having an elongated abutment surface for arresting movement of sheets sliding down said support surface, said support surface being adapted to guide a series of successively delivered sheets down along same such that an edge of the sheets individually or in a stack are aligned against said abutment surface, driving means adapted to move said abutment surface in a first driving direction parallel to its length to feed a sheet or stack of sheets in contact therewith towards a second registration stop extending transverse to and adjacent said first registration stop to intercept and align a second edge of each of the sheets, said driving means also being adapted to move said abutment surface in a second reverse direction opposite to said first driving direction for conveying a stack of aligned sheets off said support surface.

4,248,414

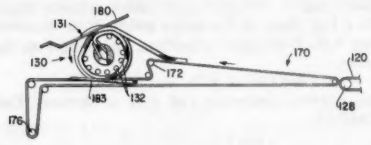
PANEL FOLDING MACHINE AND METHOD

Herman Rovin, Norwalk; Theodore Opuszenski, Darien, and Joseph Pellicano, Greenwich, all of Conn., assignors to Automatech Industries, Inc., Bridgeport, Conn.

Filed Aug. 31, 1978, Ser. No. 938,335

Int. Cl.³ B65H *45/00*

U.S. Cl. 493—416 **7 Claims**



1. The process of flat folding large panels of limp material, such as fabric, which comprises

(a) gripping the panel by opposed corners of its leading edge,

(b) winding the panel about first stage forming drums positioned adjacent the sides of the panel and disposed on a common first axis of the panel,

(c) axially withdrawing the forming drums from the wound panel and causing or permitting the wound panel to assume a generally flat form,

(d) conveying the wound panel laterally to a second stage winding station,

(e) engaging the leading lateral edge of the once-wound panel and winding the same about a second stage forming drum along a second axis at right angles to said first axis,

(f) maintaining light squeezing pressure on said panel during the second stage winding thereof,

(g) withdrawing said second forming drum from the twice-wound panel, and

(h) causing the twice-wound panel to assume a generally flattened form by continuing said squeezing pressure after withdrawal of said second stage forming drum.

2. Apparatus for winding a panel of fabric or the like, which comprises

(a) a pair of axially spaced first stage winding drums engageable with opposite leading edge corner areas of the panel for effecting a first stage of winding thereof,

(b) a lateral conveyor belt for transporting a once-wound panel laterally,

(c) said lateral conveyor belt including an elongated laterally disposed conveyor belt underlying said first stage winding drums,

(d) support means for said conveyor belt, operative normally to support said belt at a level sufficiently below said first stage winding drums to accommodate lateral passage of a once-wound panel underneath at least one of the drums,

(e) controllable means for elevating said conveyor belt during a fist stage winding operation to a level closely underlying the winding fabric,

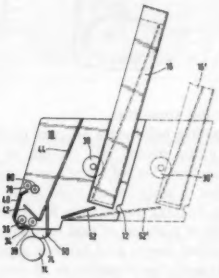
(f) a second stage winding drum positioned to receive a lateral edge of the once-wound panel,
(g) said drum including panel support means of generally cylindrical outline,
(h) at least a portion of said panel support means forming an opening for the generally radial entry of the once-wound panel,
(i) clamping jaw means generally within the outline of said drum and aligned with said opening for the engagement of the end of a radially entering panel, and
(j) means for axially withdrawing said support means and said jaw means, relative to the panel, after completion of second stage winding.

4,248,415

APPARATUS FOR FEEDING SHEETS OF PAPER FROM A MAGAZINE TO A PRINTING OFFICE MACHINE

Helmut Steinhilber, Königstr. 47, D-7210 Rottweil, Fed. Rep. of Germany

Filed Apr. 11, 1979, Ser. No. 29,146
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1978, 2816442
Int. Cl.³ B65H *5/26*
U.S. Cl. 271—9 **15 Claims**



1. An apparatus for feeding single sheets of paper from a stack of paper stored in a paper magazine to the printing platen of a printing office machine, said apparatus including a rotating top-sheet separating roller disposed to make continuous operating contact with said stack of paper, and said apparatus including means for operative association with said office machine and including transmission means for drivably coupling said printing platen to said separating roller, said transmission means including an overrunning clutch, said transmission means being adapted to rotate said separating roller in a paper feed direction driving the rotation of said printing platen in a direction opposite to that for introducing paper into said machine to position the top sheet from said paper stack in a precisely defined initial position, said overrunning clutch being arranged to interrupt the rotation of said separating roller during the rotation of said printing platen in the opposite paper imprinting direction.

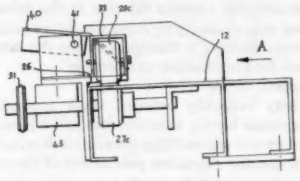
4,248,416

SHEET FEED EQUIPMENT

Martin R. P. Seib, London, England, assignor to Martin Seib Limited, Stanmore, United Kingdom

Filed Feb. 12, 1979, Ser. No. 11,089
Claims priority, application United Kingdom, Feb. 17, 1978, 6346/78
Int. Cl.³ B65H *5/00*
U.S. Cl. 271—10 **7 Claims**

1. Sheet feed equipment comprising means defining a sheet-supporting plane, a hopper in which a stack of sheets can be located and a station at which sheets fed from the hopper are brought to rest one by one, the hopper and station being spaced apart along the supporting plane, a sheet register surface extending upwardly from the supporting plane along one edge thereof against which register surface one edge of each sheet bears as it moves along the supporting plane from the hopper to the station, a plurality of sheet drive rolls rotatably mounted to turn about axes each spaced below the supporting plane by an amount just less than the radius of the respective drive roll to allow a region of each sheet adjacent to said sheet edge to frictionally engage a surface region of that roll, a counter roll for each drive roll to define a nip therewith, each counter roll being rotatably mounted to turn about an axis disposed above the supporting plane and movable in the vertical direction



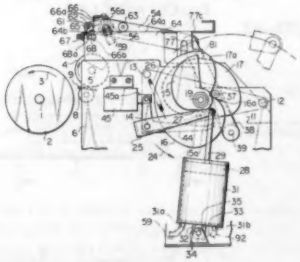
above the supporting plane, means to move the lowermost sheet in the hopper from the hopper to engage it in the nip closest to the hopper, means to drive only the sheet drive roll of each pair defining a nip in the direction from the hopper to the station, and means to arrest the movement of a sheet when it reaches the station, the side of the means defining the supporting plane remote from said side register surface being open to permit easy manual placement of sheets in said supporting plane in a direction parallel to said plane but normal to the feed direction occasioned by said drive rolls, and the supporting plane being inclined with respect to the horizontal so that the side register surface is lowermost.

4,248,417

SHEET FEED MECHANISM COMPRISING ONE-ROTATION CLUTCH AND SUCTION FOOT ASSEMBLY

Sakae Fujimoto, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 666,295, Mar. 12, 1976, abandoned. This application Dec. 14, 1977, Ser. No. 860,495
Claims priority, application Japan, Mar. 12, 1975, 50/33774; Jun. 17, 1975, 50/74035; Sep. 29, 1975, 50/117496
Int. Cl.² B65H *3/08, 3/48;* F16D *11/00*
U.S. Cl. 271—98 **7 Claims**

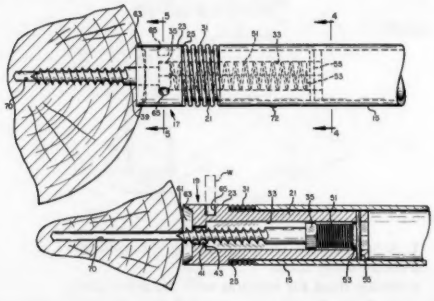


1. A one-rotation clutch assembly, comprising:
a rotary drive shaft;
a ratchet fixed for rotation with the drive shaft;
a disc formed with a detent notch rotatably mounted on the drive shaft;

a pawl rotatably carried by the disc adjacent to the detent notch;
a detent member biasingly urged against a periphery of the disc and operative to engage in the detent notch;
a resilient arm fixed at one end to the pawl and extending toward the detent notch;
the detent member, when engaged in the detent notch, engaging with the resilient arm so as to urge the pawl out of engagement with the ratchet; and
actuating means actuable, when the detent member is engaged in the detent notch, to move the pawl into engagement with the ratchet by resiliently deforming the resilient arm to drivably connect the disc to the drive shaft, the resilient arm disengaging from the detent member when the detent member is disengaged from the detent notch.

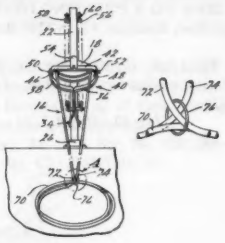
6. A sheet feed mechanism comprising:
sheet support means;
substantially vertically oriented sheet engagable suction orifice means having a suction foot and a presser member carried by and surrounding the suction foot, an end of the presser member extending past an end of the suction foot;
pressure supply means to supply a negative gage pressure to the suction orifice means;
mechanism means comprising a first cam assembly to actuate the pressure supply means to supply a negative gage pressure to the suction orifice means while the suction orifice means moves from a sheet engaging pickup position to a sheet feed position and a second cam assembly to both horizontally move the suction orifice means between the sheet feed position and an intermediate position above the sheet engaging pickup position and vertically reciprocatingly move the suction orifice means between the intermediate position and the sheet engaging pickup position; and
blower orifice means facing an edge of the sheet support means, the pressure supply means being actuated by the first cam assembly when the suction orifice means is in the sheet engaging position to supply a positive gage pressure to the blower orifice means;
the pressure supply means comprising a cylinder, a piston sealingly slidable in the cylinder for reciprocating movement by the first cam assembly, a pressure passageway leading from the cylinder to the blower orifice means, and a suction passageway leading from the cylinder to the suction orifice means, the pressure passageway and the suction passageway extend through a same end portion of the cylinder.

4,248,418
RUNG FITTING FOR PLAYGROUND EQUIPMENT
Marvin P. Friedberg, New York, N.Y., assignor to Cascade Pacific Lumber Company, Portland, Oreg.
Filed Feb. 5, 1979, Ser. No. 9,148
Int. Cl.³ A63B *1/00*
U.S. Cl. 272—62 **11 Claims**



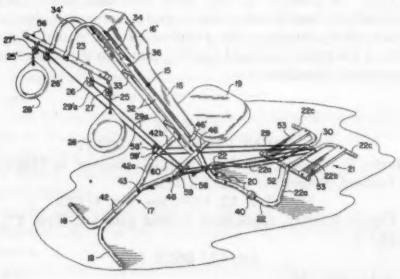
1. A device of the class described, comprising:
a rung fitting having a portion for rotatably receiving a rung,
a bolt for securing said rung fitting to an upright support,
and means providing a non-rotatable sliding fit between the bolt and the rung fitting to facilitate endwise threading movement of said bolt into the upright support upon rotation of the rung fitting, with the latter disposed in close proximity to the upright support.

4,248,419
SWIMMING APPARATUS
George Hohwart, 2765 Eager Rd., Howell, Mich. 48843
Filed May 18, 1979, Ser. No. 40,232
Int. Cl.³ A63B *31/00*
U.S. Cl. 272—71 **17 Claims**



1. In a swimming apparatus,
an endless rope-like belt means adapted to cooperate with an associated guide means and having at least two loops coiled in a section thereof for placement around the waist of a swimmer in snug fitting relation thereto; and
holding means defining an aperture for receiving and loosely fitting the three portions of said section making up said at least two coiled loops, said holding means being free to move bodily with the swimmer in all directions relative to said guide means, whereby said swimmer has relatively unrestricted freedom of movement during swimming but is restrained in his forward motion by said belt and guide means.

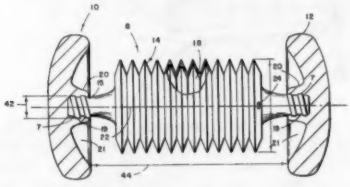
4,248,420
DYNAMIC SELF-RESISTING EXERCISE CHAIR
Thomas J. Hayes, New York, N.Y., assignor to Blazon-Flexible Flyer, Inc., West Point, Miss.
Filed Feb. 6, 1979, Ser. No. 9,843
Int. Cl.³ A63B *21/00*
U.S. Cl. 272—126 **14 Claims**



1. A dynamic self-resisting exercise chair having a body-supporting frame, a support member having its upper end portion pivoted on said frame intermediate its ends and adapted when its lower end rests on a horizontal supporting surface to sup-

port said frame in upwardly inclined position, a base connected to the lower end of said frame and resting on said supporting surface, a footrest swiveled on said base for swinging toward and away from said frame, a crossbar mounted on the upper end of said frame with its ends projecting laterally from said frame, and rope and pulley means connecting the projecting ends of said crossbar and said footrest for transmitting a pulling force applied to the ends of said crossbar to said footrest to swing it rearwardly toward the frame, whereby an occupant supported on said frame can apply said pulling force with his arms and resist it by pushing his legs forwardly against said footrest.

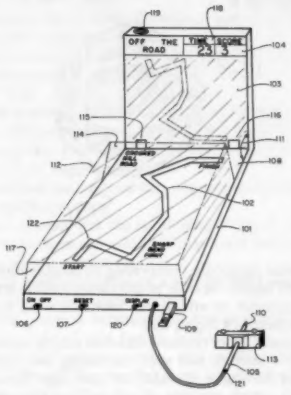
4,248,421
CHEST EXERCISER
Maria V. Salazar, 1323 Washington St., Omaha, Nebr. 68107
Filed Jun. 26, 1979, Ser. No. 52,438
Int. Cl.³ A63B *21/00*
U.S. Cl. 272—130 **1 Claim**



1. A chest exerciser comprising a compressible spring means normally expanded in shape, a right and left handle, said right and left handles being attached to opposite ends of said spring means, said spring being made of thermoplastic material, and having a hollow center, said spring having corrugated sides to facilitate compression, an air escape means operatively associated with said spring through which air passes when said spring is compressed or expanded, said handles being in a disc shape, so that the entire palm of a hand can be used to compress said spring, said spring having an axis of compression, said handles being transverse to said axis, said handles being rounded on their exterior surfaces so as to comfortably fit one's hands, said spring having plastic threaded portions at its ends, said handles being provided with threads adjacent said axis, said handles being threadedly mounted on said threaded portions of said spring, said air escape means comprising a hole means in said spring, said handles being concave on their inner sides between their outer edges and said threaded portions, all outer surfaces of said handles being substantially blunt for comfort when gripped against.

4,248,422
ELECTRONIC MAZE GAME
Gene Messina, 12 Buccaneer La., E. Setauket, N.Y. 11733
Continuation-in-part of Ser. No. 861,847, Dec. 19, 1977, Pat. No. 4,175,743. This application May 3, 1979, Ser. No. 35,726
Int. Cl.³ A63F *9/14*
U.S. Cl. 273—1 E **8 Claims**

1. A maze device comprising:
(a) a maze board, considered for reference as being held in the horizontal plane, said board having a maze path with two generally parallel, vertically oriented sides,
(b) a magnetically attractive maze cover means separated from the top of the maze by being positioned above and generally parallel to said maze boards, said cover means including means to make said cover opaque,
(c) a reflective surface means located at one end of the maze and positioned at an angle to permit viewing of the maze from above the cover when the cover is opaque,
(d) a wand comprising a tip with a width which fits between the two sides of the maze path without touching either side, a magnetic base which rests upon the cover and is slideably held to the cover by means of magnetic attraction between the magnet and the cover, a handle connected to the upper side of the magnet, and connecting means connecting the magnetic base and handle to the tip of the wand, by way of extending beyond the cover on the



upper side of the cover and then downward to clear the cover and then back beneath the cover to enable the tip to be moved along the maze path by moving the handle on the upper side of the cover, and
(e) display means for indicating contact between the tip of the wand and a side of the maze path.

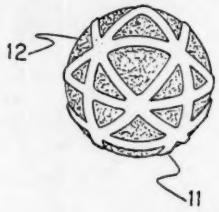
4,248,423
TETHERBALL
Hussein M. Lotfy, 28, Sherif St., Cairo, Egypt
Filed Jul. 12, 1979, Ser. No. 56,934
Int. Cl.³ A63B *39/00*
U.S. Cl. 273—58 C **4 Claims**

1. A ball for use in playing tetherball games comprising a hollow unitary piece of resilient material, said ball being oval in shape when at rest and having two holes at opposite ends of the shorter axis of said ball, one of said holes being larger than the other for introduction of a stop into the interior of said ball for use in attaching a tethering cord to said ball at the smaller hole, said ball characterized by increased life due to dissipation of the heat generated when the ball is struck and further characterized when in use by a whistling sound resulting from said larger hole being exposed to the air.

4,248,424
AERIAL PROJECTILE

Ren Judkins, 2260 Belair Dr., Salt Lake City, Utah 84109

Continuation-in-part of Ser. No. 666,468, Mar. 12, 1976, abandoned. This application Sep. 14, 1977, Ser. No. 833,208
Int. Cl.³ A63B *43/02, 37/06*
U.S. Cl. 273—60 B **13 Claims**

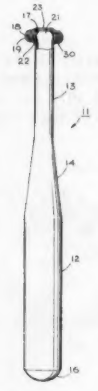


2. An aerial projectile comprising in combination:
a resilient, highly flexible plastic foam which serves as baffling material to effectively increase wind resistance to said projectile's flight; and
a shell formed from resilient material which resists deformation after impact, said shell encircling said baffling material and having a plurality of openings formed therein through which portions of said baffling material protrude substantially beyond the periphery of said shell to increase wind resistance to said projectile's flight.

4,248,425
HOLLOW BAT AND METHOD OF MAKING

James L. Easton, Los Angeles, and Gary W. Filice, Canoga Park, both of Calif., assignors to James D. Easton, Inc., Van Nuys, Calif.

Continuation-in-part of Ser. No. 855,320, Nov. 8, 1977, Pat. No. 4,177,989. This application Apr. 16, 1979, Ser. No. 30,617
The portion of the term of this patent subsequent to Dec. 11, 1996, has been disclaimed.
Int. Cl.³ A63B *59/06*
U.S. Cl. 273—72 A **2 Claims**

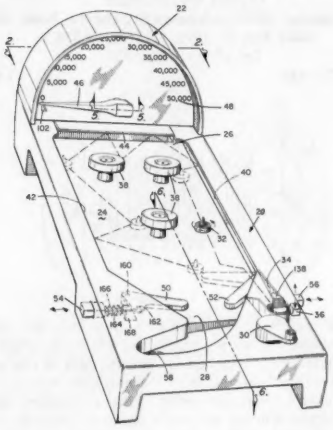


1. A ball bat comprising a bat body having a generally cylindrical hollow handle portion open at one end and having an enlarged section adjacent the open end; a hollow end knob having an interior cavity of transverse cross-section substantially larger than that of the handle portion of the bat body, the cavity having at one end an opening adapted to fit closely over a handle portion and being closed at the other end by a transverse wall; a ring of resilient material positioned within the interior cavity of the end knob; the end knob being positioned over the enlarged end section of the handle portion of the bat body with the end of the body abutting the transverse wall of the knob and the cavity opening encompassing the handle portion adjacent the enlarged section.

4,248,426
SPINNING TOP PINBALL-TYPE GAME

Larry A. Sims, Hermosa Beach; Gerard L. Lambert, Torrance; Raymond J. Gross, Culver City, and Harold B. Collins, Santa Monica, all of Calif., assignors to Mattel Inc., Hawthorne, Calif.

Filed Dec. 4, 1978, Ser. No. 965,972
Int. Cl.³ A63B *67/08, 67/14*
U.S. Cl. 273—108 **17 Claims**

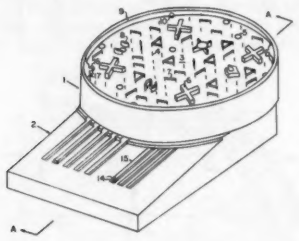


1. In a pinball-type game, the combination comprising:
a housing having a playing surface;
means for imparting motion to a projectile for traversing said playing surface;
a scoring surface on said housing;
a rocker arm member on said housing in proximity to said scoring surface and to said playing surface, said rocker arm member being positioned for impact by the projectile;
a pointer member pivotally mounted on one side of said scoring surface;
a gear member coupled for rotation with said pointer; and
pawl means mounted on the other side of said scoring surface, said pawl means being contacted by said rocker arm member for coacting with said gear member whereby to increment said pointer through an angle generally proportional to the force of the impact of said rocker arm member by the projectile.

8. In a pinball-type game, the combination comprising:
a housing having a generally planar playing surface with first and second ends, and first and second spaced side rails;
obstacle means mounted on said playing surface;
scoring means mounted adjacent said second end, said scoring means having a movable member adjacent said playing surface;
a top member having an irregularly configured base portion and a contoured bottom end; and
top spinning means mounted on said housing, said top spinning means having a sleeve member with an aperture configured for receiving at least a part of said base portion, gear means for rotating said sleeve member, and release means for axially displacing said sleeve member out of engagement with said base portion, said release means further including an arm member configured for engaging the body portion of said top member upon axial

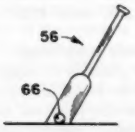
movement of said sleeve member for directing the spinning top onto said playing surface, impact of said top with said movable member actuating said scoring means.

4,248,427
ROTATING SURFACE PINBALL GAME
Donald W. Vierimaa, 5512 Harvey La., Alexandria, Va. 22312
Filed Mar. 14, 1979, Ser. No. 20,513
Int. Cl.³ A63B *67/14*
U.S. Cl. 273—110 **5 Claims**



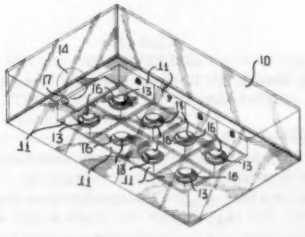
1. In a pinball type game including a housing having an inclined and rotatable playing surface over which a ball may be propelled, at least one ball to be propelled on the playing surface, targets and/or traps located on the playing surface for striking by a ball, the improvement wherein a propeller on the playing surface is connected by a shaft passing through the playing surface to a wheel, gear, or similar device which is held against a raised ring under the playing surface such that when the playing surface is rotated, the wheel, gear, or similar device rolls along the ring and the propeller rotates.

4,248,428
GAME APPARATUS AND PADDLE THEREFOR
Ernest Vilches, 3417 10th St., Tampa, Fla. 33606
Filed Sep. 15, 1978, Ser. No. 942,831
Int. Cl.² A63B *71/02, 59/00*
U.S. Cl. 273—118 R **1 Claim**



1. A game apparatus for a first and a second player, comprising in combination:
- a first and a second home plate spaced from one another in an open play area for the first and second player, respectively;
- each of said home plates comprising a plurality of longitudinal members for defining the outer perimeter of a home plate area;
- said longitudinal members comprises thin strip members;
- plate securing means for securing each of said longitudinal members to the open play area;
- each of said plate securing means includes plate spikes extending into the surface of the open play area;
- first and second plural supports positioned within said first and second home plates;
- each of said first and second supports includes support securing means for securing said first and second plural supports to the home plate;
- said support securing means includes a support spike extending into the surface of the home plate area;
- a first and a second cross bar removably disposed upon said first and second plural support;
- a resilient ball;
- a first and a second bat for the first and second players to prevent the ball being pitched by the other player from displacing the respective cross bar from said first and second plural supports;
- each of said first and second bats comprises a handle portion and a paddle portion;
- said paddle portion has the substantial shape of a paddle;
- said paddle portion and said handle portion being integrally formed with one another;
- said handle portion comprises a substantially uniform cross section along the length thereof;
- said paddle portion substantially symmetrically disposed about the axis of said handle portion up to a distal end portion of said paddle portion, said paddle portion including substantially flat parallel faces and substantially parallel linear sides;
- the terminal end of said paddle portion being substantially linear from one of said sides to the other of said sides and forming an acute angle substantially less than 90 degrees with the axis of said handle portion;
- said terminal end of said paddle portion being substantially bisected by the axis of said handle portion;
- said first and second plural supports includes an aperture extending therethrough;
- said support spike comprising a head portion and a tip portion and a shank portion;
- countersink means in said apertures of said first and second plural supports for receiving the head portion of said support spike when said spike extends through said aperture; and
- each of said first and second plural supports are substantially cylindrical with said apertures extending along the axis of said cylinder.

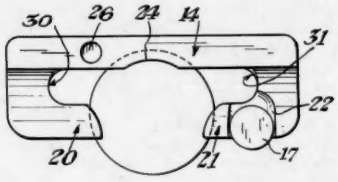
4,248,429
METHOD OF USING BALL-IN-CUP GAME
Jose L. P. Mazuela, 105-A Mayer Rd., Singapore 15, Singapore
Filed May 18, 1979, Ser. No. 40,101
Int. Cl.³ A63F *7/00*
U.S. Cl. 273—123 R **1 Claim**



1. A method of playing a game with an apparatus having an eccentrically-weighted ball and a plurality of adjacent members with semispherical recesses defined in their top surfaces and a hole defined at the bottom of each recess, wherein said recesses have a diameter which matches the diameter of the ball and wherein said holes are smaller than the diameter of the

ball but large enough to permit a player's finger to be inserted therethrough, the method comprising the steps of manipulating an eccentrically-weighted ball from recess to recess in a predetermined sequence of recesses by inserting a finger in at least one recess to raise the ball out of that recess and push it toward the next recess in the predetermined sequence.

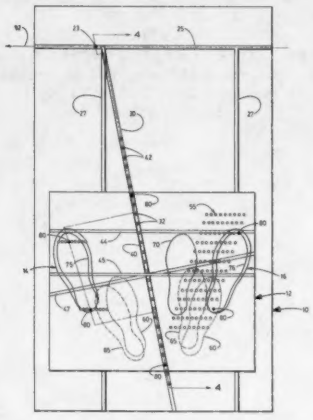
4,248,430
GOLF PUTTER
Don L. Kepler, 1050 Old Dixie Hwy., Lake Park, Fla. 33403
Filed Dec. 6, 1978, Ser. No. 966,874
Int. Cl.[3] A63B *53/00*
U.S. Cl. 273—162 D **4 Claims**



1. A golf putter, comprising:
a club body having a front surface, a top surface, side walls, and a rear surface including;
a generally planar putting surface on said front surface of said body, said planar putting surface having a central striking zone portion generally located halfway between the side walls,
said club body including a golf club shaft connecting area,
a means for retrieving, retaining and picking up a golf ball from a surface and out of a cup, said means for retrieving, retaining and picking up connected to said body,
said means for retrieving, retaining and picking up including two hook structures, each said hook structure having one end connected to said rear surface of said club body and a distal end, said distal ends projecting inwardly toward each other, said hook structures in spaced apart relation a distance less than the diameter of a golf ball, but greater than the radius of a golf ball, substantially perpendicular to said generally planar putting surface of said club head, and of appropriate thickness whereby the golf ball may be picked up by contact with the lower half of the golf ball without first moving the golf ball.

4,248,431
GOLFING AID
Donald A. Burnes, 771 E. Wrenwood La., Fresno, Calif. 93710
Filed Mar. 19, 1979, Ser. No. 21,977
Int. Cl.[3] A63B *69/36*
U.S. Cl. 273—187 R **7 Claims**

1. A golfing aid for use in practicing addressing a golf ball having an intended course of travel comprising:
A. a base mat having a predetermined position for a golf ball, a target line aligned with said position and with the intended course of travel, and a first approach line obliquely angularly related to the target line intersecting the target line adjacent to the ball position;
B. an address mat rested on the base mat having a second approach line superimposed on the first approach line on the base mat and coincident therewith, said address mat being adjustably positionable toward and from the ball position with the approach lines substantially aligned; and
C. a pair of foot mats adjustably positioned on the address mat in predetermined selected positions to designate typical dispositions of the feet of a person addressing the ball corresponding to various stances desired.



4,248,432
GOLF BALL
Larry E. Hewitt, Vermilion, and David T. Popovich, Lorain, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio
Filed Jul. 16, 1979, Ser. No. 57,633
Int. Cl.[3] A63B *37/12;* **C08G** *18/34*
U.S. Cl. 273—235 R **5 Claims**

1. A golf ball comprising a core and a polyesterurethane cover comprising the reaction product of a polyester of an aliphatic diol containing 2 to 8 carbon atoms and an aliphatic dicarboxylic acid containing 4 to 8 carbon atoms, said polyester having a molecular weight of about 800 to about 1500, reacted with para-phenylene diisocyanate or 1,4-cyclohexane diisocyanate in a molar ratio of 0.98 1.01 mols of diisocyanate per mol of polyester, said polyester-urethane having a melt index in the range of about 15 to 50.

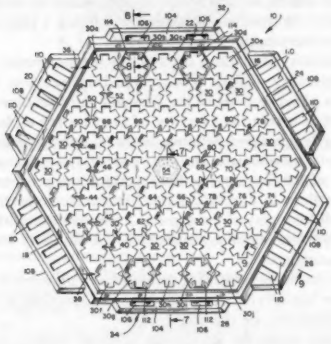
4,248,433
CHAIN REACTION FALLING PLAYING PIECES BOARD GAME
Rene Soriano, Fresh Meadows, N.Y., assignor to Ned Strongin Associates, Inc., New York, N.Y.
Filed Jul. 2, 1979, Ser. No. 54,017
Int. Cl.[3] A63F *3/00*
U.S. Cl. 273—275 **5 Claims**

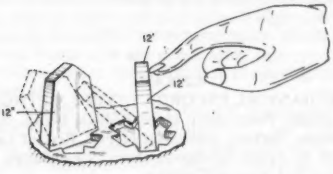
1. A table game assembly comprising
a game board having a plurality of marginal playing stations at different sides of the board for a plurality of players,
at least one primary playing piece for each of said players,
and a plurality of secondary playing pieces for each of said players,
each of said playing pieces comprising a flat elongated block having a flat bottom surface and adapted to be placed in upstanding position on said playing board,
said playing board being formed with a plurality of indented cells arranged in a pattern over the surface thereof and each sized to receive a playing piece therein in upstanding position,
said cells being arranged in said pattern to permit a continuous and unbroken row of secondary playing pieces to be set in upright position between a first primary playing

piece adjacent one playing station and a second primary playing piece adjacent another playing station,

each of said cells being formed of a plurality of intersecting rectangular slots, each sized to receive therein a playing piece and arranged to position the latter in a selected oriented position,

said playing board having two playing stations located along opposite side edges of said playing board, and said indented cells being arranged in transverse rows extending parallel to said opposite side edges, with the cells in each of said transverse rows being evenly spaced from each other and located midway between the cells of the adjacent rows, whereby to form rows of cells extending in opposite directions diagonally to said transverse rows,





at least one cell in each transverse row adjacent each playing station being marked for identification to receive a primary playing piece of the player at that playing station,

said pattern of cells being so arranged that a continuous and unbroken row of secondary playing pieces between a first primary playing piece at one playing station and a second primary playing piece at the opposite playing station can only be formed in an irregular line having a portion extending along at least one diagonal row of cells of one direction and a portion extending along at least one diagonal row of cells of the opposite direction: said irregular line having at least one bend therein,

whereby a chain reaction of falling secondary playing pieces in said row is caused by manually pushing over said first primary playing piece, thereby toppling over said second primary playing piece at the end of said row.

4,248,434

BRIDGE GAME FOR TWO OR THREE

William Weigl, 1805 Conwood Dr., Troy, Ohio 45373

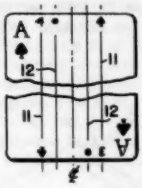
Filed Oct. 18, 1979, Ser. No. 85,998

Int. Cl.³ A63F *1/00*

U.S. Cl. 273—296 **18 Claims**

14. In a 52-card, 4-suit bridge deck used in a bridge game for two or three players at least one of which players bids to contract with an unexposed Dummy hand which is incapable of verbal response,

information on the faces of the cards relating to the suit of each card, and



masking means including a window through which only such suit information can be viewed when the masking means is placed against the card faces.

4,248,435

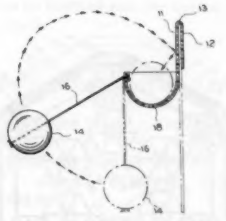
GAME TARGET WITH TETHERED PROJECTILE

Thomas C. Barmore, 4N 127 Verrill, Adison, Ill. 60101

Filed Aug. 30, 1979, Ser. No. 71,376

Int. Cl.³ A63B *67/10*

U.S. Cl. 273—331 **1 Claim**



1. A ball and cup exercise or game device arranged to be attached to a waist belt on the human body wherein the proper movement of the body causes the ball to move into the cup, said device comprising:

(a) a unitary structure having front and rear closely spaced limbs connected along upper portions thereof;

(b) said limbs being arranged to embrace said belt when wrapped about a human body and to be supported on said belt;

(c) a ball receiving and retaining cup secured to the lower extremity of said front limb, said front limb being tangent to the rear of said receiving cup;

(d) a ball connected to a flexible strand having a connection to said ball receiving cup;

(e) the frontal area of said front limb providing with said ball upon proper movement of the body for rebounding of said ball at times into the cup secured to said front limb.

4,248,436

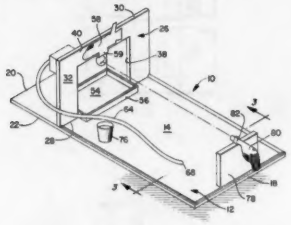
BUBBLE TARGET AMUSEMENT DEVICE

Malcolm J. Corrigan, P.O. Box 167, Southhampton, N.Y. 11968

Filed Aug. 21, 1979, Ser. No. 68,362

Int. Cl.[3] A63F *9/02*

U.S. Cl. 273—349 **6 Claims**



2. An amusement device comprising:

a supporting base;

wall means on said base intermediate two edges thereof and projecting vertically therefrom, said wall means having an opening therein;

a bubble forming device mounted on said wall means above said opening, the wall means being remote from one of the edges of the supporting base; and

a device for emission of a fluid stream, said device being secured to supporting means attached to said supporting base and movable on said supporting means for aiming the fluid stream at bubbles formed at the bubble forming device, said formed bubbles projecting into said opening.

4,248,437

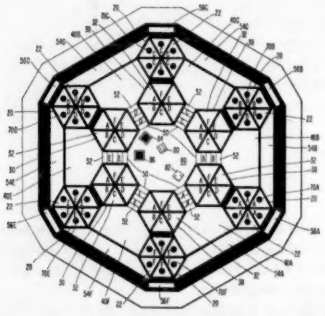
BOARD GAME

Gary T. Lemberger, 570 S. Broadway, Nyack, N.Y. 10960, and Ronald I. Lemberger, 25E Dunes La., Port Washington, N.Y. 11050

Filed Dec. 21, 1978, Ser. No. 971,696

Int. Cl.[3] A63F *3/00*

U.S. Cl. 273—243 **22 Claims**



1. A game apparatus of chance and strategy for a plurality of players comprising:

(a) a game board having indicia for defining thereon

(i) a plurality of differently-identified beginning sections, wherein each beginning section includes a series of similarly-identified subsections defined therein assigned to a player;

(ii) a plurality of first intermediate sections, wherein each first intermediate section includes a series of differently-identified subsections defined therein corresponding to similarly-identified beginning sections and wherein each first intermediate section is contiguous with a corresponding one of the beginning sections for defining a playing path therebetween;

(iii) a plurality of second intermediate sections, wherein each second intermediate section is similarly identified with one of the subsections in each of the first intermediate sections and is contiguous with at least one of the first intermediate sections for defining playing paths therebetween;

(iv) a plurality of third intermediate sections, wherein each third intermediate section includes a series of subsections for defining a playing path therein and is contiguous with a corresponding one of the second intermediate sections for defining a playing path therebetween; and,

(v) an ending section separately connected to each of the third intermediate sections for defining a playing path therebetween;

(b) a plurality of markers for a player for movement around the plurality of first, second, and third sections and the series of subsections of the first and third sections on the board, wherein the plurality of markers for a player are similarly-identified with one of the beginning sections and second intermediate sections, one of the subsections in each of the first intermediate sections and predetermined subsections in one of the third intermediate sections for establishing play of the game and wherein the markers for a player are initially positioned in the similarly-identified beginning section

(c) first means for indicating increments of movement for the player markers between the plurality of sections and series of subsections on the board; and

(d) second means for identifying different sections and subsections on the board onto which player markers are movable for defining a playing path.

4,248,438

MECHANICAL RECORD CUTTING METHOD

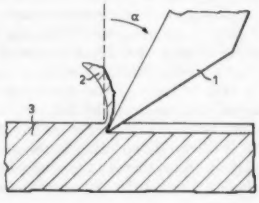
Herbert Knothe, Neumünster; Horst Redlich, Berlin, and Klaus Röschmann, Nortorf, Schülp, all of Fed. Rep. of Germany, assignors to Teldec-Telefunken-Decca Schallplatten GmbH, Hamburg, Fed. Rep. of Germany

Filed Mar. 19, 1979, Ser. No. 21,972

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1978, 2811888

Int. Cl.[3] G11B *3/00*

U.S. Cl. 369—127 **4 Claims**

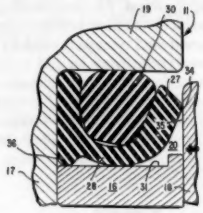


1. In a method for forming a signal record carrier having a groove which is modulated to present an information track by providing a copper-containing bath, electrolytically depositing a thin layer of copper from the bath onto a substrate, and cutting such groove into the surface of the copper layer by means of a cutting stylus, the improvement wherein said stylus presents, during cutting, a rake angle of between 10° and 20°, and said bath contains at least one glazing additive which imparts a Vickers hardness of between 110 and 300 to said copper layer.

4,248,439
STABILIZED SEAL STRUCTURE

Glenn M. Haslett, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/00841, § 371 Date Oct. 15, 1979, § 102(e) Date Oct. 15, 1979.
This PCT application filed Oct. 15, 1979, Ser. No. 136,653
Int. Cl.[3] F16J 15/32, 15/38
U.S. Cl. 277—84 19 Claims

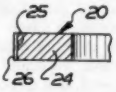


1. A stabilized seal structure (24,124,224) comprising:
a first wall (17,117,217);
a second wall (18,118,218) confronting said first wall and variably spaced therefrom to define a variable width seal space therebetween;
a third wall (19,119,219) extending across said space at one transverse boundary thereof;
a fourth wall (16,116,216) extending across said space at the transverse boundary thereof opposite said one boundary;
a seal member (25,125,225) having a C-shaped cross section defining a first leg (26,126,226) engaging said first wall, a second leg (27,127,227) having a sealing end portion (34,134,234) movably engaging said second wall seal portion (35,135,235), and a bight portion (28,128,228) extending adjacent said fourth wall and seal bight portion cooperatively defining a load member space (29,129,229), one of said fourth wall and seal member bight portion being provided with a recess (31,131,231) opening toward the other; and
a load member (30,130,230) disposed in said load member space and confronting said third wall, said load member being urged against said third wall and urging said seal member bight portion (41,141,241) overlying said recess into said recess to maintain the engagement of said sealing end portion of the seal member second leg with said second wall being substantially fixed as an incident of initial relative movement between said first and second walls reducing said space (20,120,220) width.

4,248,440
TITANIA-ALUMINA-YTTRIA PISTON RING FACING

Harold E. McCormick, Ballwin, Mo., assignor to Ramsey Corporation, Manchester, Mo.

Filed Sep. 12, 1979, Ser. No. 74,735
Int. Cl.[3] C04B 35/44, 35/46; F16J 9/22
U.S. Cl. 277—224 7 Claims



1. A powder composition for application to a bearing surface by plasma spray technique, said composition consisting about 60%–90% by weight of alumina, about 8%–35% titania and about 2%–6% yttria.

6. A piston ring having a bearing face coating applied thereto by a plasma spray technique, the plasma sprayed powder of refractory metal oxide consisting of from 60%–90% alumina by weight of coating, from 8%–35% titania and from 2%–6% yttria, the resultant coating being resistant to spalling and blistering delamination within the coating.

4,248,441
CONTROL HANDLEBAR FOR TRANSPORT OR HANDLING CARTS

Raymond Joseph, Schiltigheim, France, assignor to Ateliers Reunis S.A., Schiltigheim, France

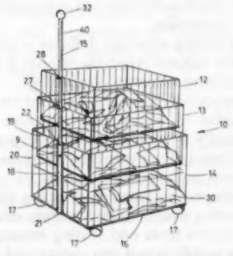
Filed Feb. 8, 1979, Ser. No. 10,704
Claims priority, application France, Feb. 16, 1978, 78 04418
Int. Cl.[3] B62B 5/06
U.S. Cl. 280—33.99 A 8 Claims

1. In a transport or material-handling cart, notably of the type put at the disposal of customers in supermarkets and other self-service shops, a control handlebar of the type comprising essentially on the one hand a pair of lateral uprights consisting each of a metal wire or tube bent on itself at its upper end and on the other hand of a grip-handle forming straight tube, and a device for assembling each upright to one end of the tubular grip handle, wherein each assembling device comprises on the one hand a sheath open at one end and closed at the other end, so that the bent end of the reveleant upright can be introduced into the sheath, and on the other hand a key for locking said sheath in position by inserting said key into the sheath cavity between the two arms of the bent upright ends, said lock key being provided on at least one of its major faces with a projection adapted to act as a lock cam by engaging a registering aperture formed in the wall of the corresponding sheath, said sheath further comprising a stud projecting from its inner face and adapted to be inserted into the corresponding end of the tubular grip handle.

4,248,442
LAUNDRY CART WITH A PLURALITY OF NESTING HAMPERS

Anne Barrett, 5 Vicora Linkway, Don Mills, Ontario, Canada (M3C 1A5)

Filed May 14, 1979, Ser. No. 38,584
Int. Cl.[3] B62B 3/02, 5/06
U.S. Cl. 280—33.99 T 2 Claims



1. A laundry cart for trundelling onto the passenger elevators in multi-storey dwellings and having a pole-handle and a plurality of nesting hampers thereto each freely detachable

from each other and the pole-handle and adapted to store separately upon dismantlement in a car trunk or dwelling closet, comprising in combination;

a first hamper means having a rigid base and at least one rigid side vertical wall thereto, and having a cylindrical socket holder having a closed lower end and an open upper end when vertically fixed to said rigid side wall thereof, said socket being fixed substantially midway of the length of said side wall;

said pole-handle being at least twice the length of the depth of said side wall of said hamper and being removeably attachable in a vertical operative position in said socket which freely surrounds a portion of said pole-handle set therein;

and at least one other hamper means nestable in said first hamper means and having a ring holder means fixed to and adjacent the upper side thereof and in a vertical line above the axis of said cylindrical socket to receive in freely surrounding relationship said pole-handle prior to the insertion of said pole-handle into said socket and while said socket maintains said handle in the vertical operative position for transfer of the force-push of a human agency to move the attached hampers; and wheel means attached to the bottom side of said first hamper.

4,248,443

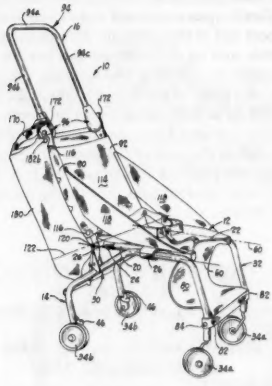
FOLDABLE STROLLER

Edward L. Ohlsen, Chagrin Falls, Ohio, assignor to Prime Line Industries, Inc., Cleveland, Ohio

Filed Oct. 25, 1978, Ser. No. 954,480

Int. Cl.[3] B62B *7/06*

U.S. Cl. 280—39 **11 Claims**



1. A stroller which is foldable to a substantially flat compact configuration comprising:

(a) occupant seating structure defining a generally horizontal occupant support when the stroller is erected;

(b) seat supporting structure comprising:

(i) seat supporting members disposed on respective opposed sides of said seating structure and extending downwardly from said occupant support,

(ii) at least one ground engaging wheel connected to each of said seat supporting members;

(c) bearing structure between said seating structure and said seat supporting structure, said bearing structure transmitting load forces from said seating structure to said seat supporting members and connecting said seat supporting members to said seating structure for pivotal folding movement about a folding axis extending along the associated side of said seating structure and vertically adjacent said occupant support, said bearing structure enabling pivotal folding of said seat supporting structure to an orientation generally parallel with and closely adjacent the occupant support;

(d) handle means connected to at least one of said occupant seating or bearing structures for transmitting motive and steering forces; and

(e) connecting means between said handle means and said at least one structure, said connecting means comprising a pivot member supporting said handle means for pivotal folding movement about an axis vertically adjacent said occupant support so that said handle means is foldable from an erected position for transmitting motive and steering forces to an orientation substantially parallel with and closely adjacent said occupant support;

(f) said handle means comprising an end section projecting beyond said connecting means and engaging at least one of said seat supporting members at a location spaced from said folding axis to prevent folding movement of said at least one seat supporting member about said axis when said handle means is in its erected position.

4,248,444

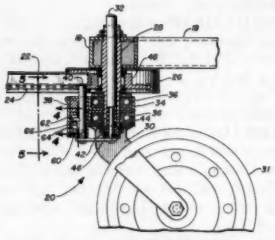
STEERING MECHANISM FOR MOBILE CARRIAGE

Philip C. Johnson, Cincinnati, Ohio, assignor to Dentsply Research & Development Corp., Milford, Del.

Filed Jun. 7, 1979, Ser. No. 46,872

Int. Cl.[3] B62B *3/00*

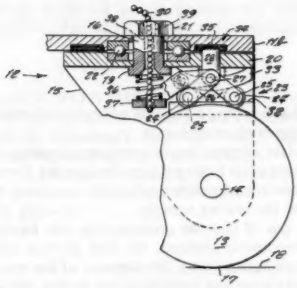
U.S. Cl. 280—47.11 **5 Claims**



1. A hospital-type elongated mobile carriage supported upon four casters disposed respectively in pairs spaced along opposite sides of said carriage in fore and aft relationship, and vertical shafts connecting said casters to said carriage for free swivelling about the axes of said shafts, in combination with coupling means extending between one fore and aft pair of said casters along one side of said carriage and operable in a manner that when one of said pairs of casters is rotated about the vertical axis thereof, the other caster of said pair is rotated about the vertical axis thereof in the opposite direction and thereby preventing the carriage from straying from a desired line of motion as controlled by an operator when pushing said carriage along said line of motion, said coupling means comprising sprocket gears rotatably supported by the vertical shafts of said one pair of fore and aft casters, an endless sprocket chain extending between and around said sprocket gears with the longitudinal portions of said chains crossing each other midway thereof, one of said pairs of casters having a fork-like yoke supporting a caster wheel between the legs thereof; and releasable securing means carried by said yoke including a pin movable vertically toward and from the sprocket gear of said caster, said sprocket gear having a hole to receive one end of said pin to connect said gear to said yoke, a vertically movable actuating member connected to said pin and parallel therewith and manually movable in one direction to withdraw said pin from engagement with said sprocket gear, spring means engageable with said actuating member to urge it in a direction to engage said pin with said sprocket gear, and position control means for said pin carried by said yoke and operable to hold said pin releasably in disengagement with said sprocket gear when said actuating member is moved in one

direction and upon the next movement of said member in said disengaging direction said position control means is actuated to release said pin from said disengaged position and is moved by operation of said spring means into engagement with said sprocket gear.

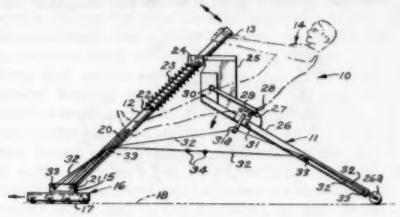
4,248,445
CASTER BRAKE AND SWIVEL LOCK
Hervey P. Vassar, Nicol Ter., Rumson, N.J. 07760
Filed Jun. 18, 1979, Ser. No. 49,214
Int. Cl.³ B60B *33/02*
U.S. Cl. 280—79.1 R **1 Claim**



1. A dolly, comprising in combination, a platform mounted upon a frame, integral with a plurality of underside plates each of which is mounted upon a caster wheel assembly each of which includes a caster wheel rotatable about an axle supported in an inverted, U-shaped bracket, said bracket being pivotable about a vertical king pin supported in said plate, a thrust bearing between said plate and said bracket, a brake mechanism for said caster wheel and a swivel lock for said bracket; said brake mechanism comprising a pair of roller movable by lever means for being wedged between a rim of said wheel and a stationary component of said bracket; said swivel lock comprising a post carried by said bracket and being upwardly movable by said lever means so to jamb against a frictionally holding element upon an underside of said plate; said lever means comprising a lever pivotable on a stationary pin through an intermediate portion thereof, one end of said lever being connected to said brake mechanism while an opposite end of said lever is connected to a spring-loaded bead chain, said bead chains from each said caster wheel assembly extending through said king pins and being all connected to eccentric points around a single reel so to wind therearound, said reel being integral with a pulley having a cable wound therearound, and a knob on an end of said cable; said reel and pulley being supported rotatably on a shaft extending downward from an underside of said platform.

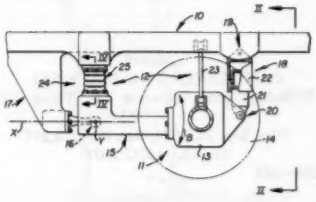
4,248,446
SLOPEMOBILE VEHICLE
W. Ted Armstrong, 388 - 43rd St., Oakland, Calif. 94609
Filed Oct. 13, 1978, Ser. No. 951,351
Int. Cl.³ B62K *17/00*
U.S. Cl. 280—87.01 **3 Claims**

1. A slopemobile vehicle, comprising, in combination, an angularly disposed front tube, a coil spring received on the upper portion of the outer periphery of said angularly disposed front tube, providing shock absorbing means for the rider, and simultaneously enabling up and down movement of a vertical plate secured fixedly, at one end, to a bracket freely received on said angularly disposed front tube, the opposite end of said vertical plate being fixedly secured to the forward end of an angularly disposed rear tube, a tractor pod pivotally secured, by a pair of transversely spaced-apart brackets, to the lower end of said angularly disposed front tube, said tractor pod providing lateral stability and preventing lateral slippage of said vehicle, said tractor pod comprising an endless tread in rolling engagement with a slope surface, and a horizontal bar, freely received in said vertical plate, providing seat support means for the rider, a pair of spaced-apart rods secured fixedly



and transversely, to the lower portion of said angularly disposed front tube, the uppermost rod providing foot rest means for the rider, and a stabilizer rod is secured fixedly, at each end, to the ends of each of said pair of spaced-apart rods, by suitable fastener means.

4,248,447
VEHICLE SUSPENSION SYSTEM
Cullen P. Hart, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Dec. 6, 1979, Ser. No. 133,633
Int. Cl.³ B60G *9/02*
U.S. Cl. 280—112 R **6 Claims**



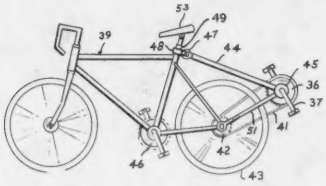
1. In a vehicle disposed on a longitudinal axis (X) and having a frame (**10**), an axle assembly (**11**), connection means (**16**) for permitting both relative bouncing (B) and rolling (R) movements between said frame (**10**) and said axle assembly (**11**), and a suspension system (**12**) mounting said assembly (**11**) beneath said frame (**10**), including first suspension means (**18**) for damping said bouncing movement, and second suspension means (**24**) for damping said rolling movement (R), the improvement comprising;

said second suspension means (**24**) including a pair of laterally spaced springs (**25**) disposed in a vertical plane perpendicular to said longitudinal axis (X) and which intersects said connection means (**16**) and further disposed outboard of said frame (**10**).

4,248,448
BICYCLE ENABLING A SUBSTANTIALLY FULL LENGTH PRONE RIDING POSITION
Igor Dmitrowsky, 92-36 54th Ave., Elmhurst, N.Y. 11373
Filed Jun. 27, 1979, Ser. No. 52,409
Int. Cl.³ B60K *13/00*
U.S. Cl. 280—261 **1 Claim**

1. A rear wheel drive unit removably attachable as an accessory to the rear of the frame of a bicycle that has a rearwardly extending fork supporting an axle upon which axle a rear drive wheel carrying a chain driven sprocket gear is mounted; the unit comprising a crankshaft sleeve, a pedal crank driven sprocket supported by the sleeve, elongated truss means fixed

at one end to the sleeve and adapted at its other end to be removably attached to a rear portion of the frame of the bicycle so as to support the sleeve rearwardly of and beyond the rear drive wheel, the pedal crank driven sprocket being adapted for driving engagement by means of an endless drive chain with the sprocket gear, wherein the elongated truss



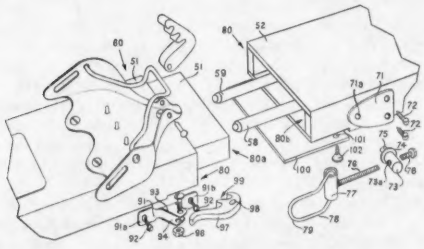
means includes an elongated truss member fixed at one end to the sleeve and having at its opposite end means for removably mounting it to the frame; and the truss means further includes a pair of elongated truss elements, each element of the pair being fixed at one end to the sleeve and having at its opposite end means for removably supporting it on the axle of the rear drive wheel.

4,248,449

CANTILEVER TWO PIECE SKI

Whitney Wilhelmy, 6510 Idlewood Rd., Tahoe Vista, Calif. 95732

Filed Sep. 30, 1976, Ser. No. 728,297
Int. Cl.[3] A63C *5/07*
U.S. Cl. 280—603 **4 Claims**



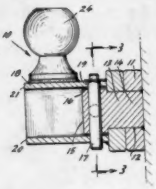
1. A collapsible ski comprising: a first ski portion having connecting means including a protruding element suitable to engage in the second ski portion, and containing within said protruding element two sockets suitable to engage two protruding bosses; a second ski portion having connecting means cooperative with the connecting means on the first ski portion wherein the said connecting means comprises a socket suitable to engage the protruding element on the first ski portion and wherein two protruding bosses protrude outwardly from the base of the socket in the second ski portion in such manner that the protruding bosses may engage within the two sockets within the protruding elements on the first ski portion; releasable means holding the two ski portions in connecting relationships with one another; and, sole plate means covering the connection between the two ski portions on their underside.

4,248,450

VEHICLE TOWING HITCH HAVING READILY SELECTABLE TOW BALLS

Wesley I. McWethy, 1719 Catalpa Ave., Waukegan, Ill. 60085

Filed Mar. 5, 1979, Ser. No. 17,429
Int. Cl.[3] B62D *53/00*
U.S. Cl. 280—415 A **2 Claims**



1. A towing hitch having a plurality of readily selectable tow balls, said towing hitch comprising:

a mounting plate adapted for mounting on a towing vehicle, said mounting plate having a circular opening therein in a generally horizontal position when the mounting plate is mounted on the towing vehicle,

a solid main pin of circular cross-section and having two adjacent concentric portions, the first portion having a diameter co-extensive with the diameter of the opening in the mounting plate and securely fitted therein, the second portion having a diameter greater than the diameter of the first portion and having a passageway therethrough along the axis thereof,

a tubular body of generally square cross-section and having opposed walls, said body being adapted for rotation about the first portion of the main pin and being in abutting relationship between the mounting plate and the second portion, opposing walls of said body having aligned openings therein,

a plurality of tow balls of different size fixedly mounted on the walls of said body, and

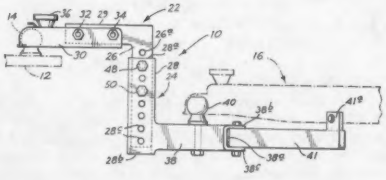
an index pin removably insertable through the aligned openings in the opposing walls of the body and the passageway in the second portion of the main pin whereby the body of the towing hitch can be rotated about the main pin to select a tow ball of the desired size and said index pin inserted through said aligned openings and passageway to retain said body and tow ball in a fixed position.

4,248,451

HITCH ASSEMBLY

Roger Usinger, 11311 S. Forest Ridge Rd., Oregon City, Oreg. 97045

Filed Apr. 13, 1979, Ser. No. 29,785
Int. Cl.[3] B60D *1/06*
U.S. Cl. 280—490 R **6 Claims**



1. Hitch assembly for use in interconnecting a towing vehicle having a ball member coupling element and a drawn vehicle comprising:

a socket member for removable mounting on said ball member coupling element, said socket member including a channel portion extending therefrom;

coupling means including first and second components, said second component including a tubular portion having opposed open ends and an arm extending generally perpendicularly therefrom for detachable connection to the drawn vehicle, said first component including an insertable portion for positioning within said tubular portion through a selected one of said ends for preselected positioning within said tubular portion, said first component also including a leg extending generally perpendicularly therefrom for detachable mounting within said channel portion of said socket member so that said leg may be rotated and selectively positioned in said channel portion for disposing said insertable portion substantially upright or downwardly; and

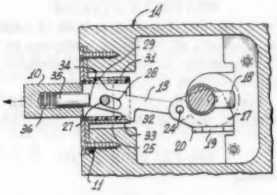
securing means for predetermining and fixing the relative position of said first and second components.

4,248,452

LOCK WITH IMPROVED PROVISIONS FOR WITHSTANDING FORCES APPLIED TO BOLT

Howard M. Allenbaugh, Fountain Valley, Calif., assignor to M.A.G. Engineering Co., Gardena, Calif.

Filed Jul. 12, 1978, Ser. No. 923,912
Int. Cl.³ E05C *1/16*
U.S. Cl. 292—167 **16 Claims**



1. A door lock of the dead bolt type comprising:

a bolt;

a housing including a sleeve in which said bolt is movable between a retracted position and an extended position;

actuator means for causing movement of said bolt between said retracted position and said extended position, said actuator means including a mortise cylinder;

a link connecting said bolt to said actuator means;

an opening in said housing above said link;

a prong carried by said link;

coaction means for lifting said prong into said opening to prevent movement of said bolt upon the application of a force to said bolt directed toward said retracted position, said catch means comprising a pin and slot connection between said bolt and said link, said slot being inclined with respect to the movement of said bolt in said housing;

resilient means disposed within said bolt for urging said bolt away from said retracted position and toward said extended position; and

means carried by said link and normally aligned with a portion of said housing for wedging said link within said housing to retain said bolt in said housing when a force is applied to said bolt in its direction of movement from said retracted position to said extended position.

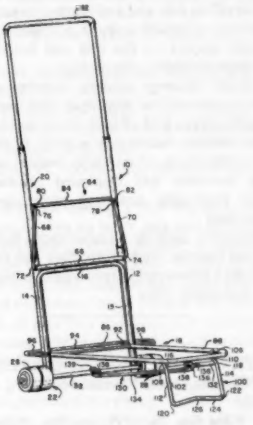
4,248,453

PORTABLE LUGGAGE CARRIER

Ted Stark, 60 Eagle Rock Way, Montclair, N.J. 07042

Filed Dec. 14, 1978, Ser. No. 969,372
Int. Cl.³ B62B *3/02*
U.S. Cl. 280—655 **13 Claims**

1. In a collapsible carrier for transporting loads comprising a support member having two legs and an adjoining cross arm, fold out platform means pivotably connected to said support member for holding said loads, and telescoping handle means affixed to said support member for moving said carrier, the improvement comprising wheel means adjoined to said handle means, said wheel means including an axle fixedly adjoined to said handle means and a pair of spaced apart cylindrical-like wheels slidingly and rotatably received on said axle between said handle means and the ends of said axle, each of said wheels having two outer edges of a first diameter, a narrow central section located between the outer edges and having a second diameter larger than said first diameter for enabling the wheel to contact a travel surface along which the load is transported along said narrow central section, two conical-like sections located between said central section and said outer edges having a diameter greater than said first diameter and less than said second diameter, said conical-like sections being symmetrical to each other and having a tapered outer surface forming an acute angle with said travel surface sufficiently small to enable solely said narrow central section to contact said travel surface when said carrier is rollling upright for minimizing rolling friction against said travel surface while enabling a corresponding one of said conical-like section tapered outer surfaces to contact said travel surface to support said carrier and enable rolling of said wheel therealong when said carrier is laterally tipped for facilitating said carrier rolling straight while decreasing the tendency of said carrier to laterally tip over under adverse conditions as said carrier is rolled along



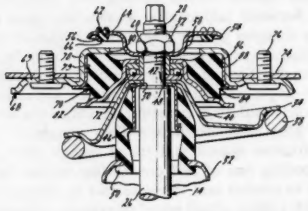
said travel surface by said wheels, said telescoping handle means including two bottom hollow tubes each affixed along the length of a different leg of the support member and having open top and bottom ends, each of said bottom hollow tubes receiving first telescoping tubes in said top ends and having a stop member in said bottom ends to retain said first tubes in said bottom tubes, said handle means further including a pivotally mounted lock bar means for locking said telescoping tubes in an extended position thereof, said lock bar means being pivotally mounted to said bottom hollow tubes for pivoting between an unlocked position for enabling said carrier to be collapsed and a locked position for locking said telescoping tubes in said extended position thereof with said carrier in an open upright position thereof, said pivoting lock bar means being transversely insertable between said first telescoping tubes in said locked position when said tubes are in said extended position and being of sufficient transverse extent for forcing said first telescoping tubes further apart from each other a sufficient distance to angulate said first telescoping tubes with respect to said bottom hollow tubes for preventing further telescoping movement of said first telescoping tubes within said bottom hollow tubes, said pivoting lock bar means being removably retainable in said locked position, whereby a stable carrier is provided in said locked position, said telescoping movement being enabled in said unlocked position.

4,248,454

SUSPENSION STRUT ISOLATOR MOUNT

Thomas N. Cotter, Milford; Robert L. Carter, Gibraltar, and Sebastian J. Giuffrida, Bloomfield Hills, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed May 21, 1979, Ser. No. 40,619
Int. Cl.³ B60G *11/56*
U.S. Cl. 280—668 **3 Claims**



1. In a vehicle suspension strut of the type having a telescoping rod and housing assembly including means for attachment to a vehicle wheel assembly, a thrust bearing carried proximate the upper end of the rod, and a mounting plate including means for attachment to a vehicle body at positions circumferentially arranged with respect to the rod and housing assembly, a resilient isolator assembly comprising:

A. an annular bearing retainer member of substantially smaller cross-sectional area than said mounting plate receiving the upper end of said thrust bearing;

B. a sleeve member receivable in press fit relationship with said mounting plate substantially coaxial with said rod and housing assembly and displaced substantially radially inwardly from said mounting plate attachment means positions; and

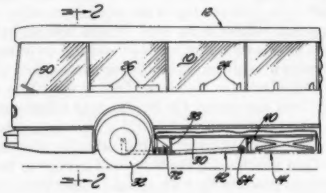
C. an elastomeric isolator member mold bonded in situ between said bearing retainer member and said sleeve member to form a subassembly received in press fit relationship by said mounting plate.

4,248,455

HEAVY-DUTY SUSPENSION SYSTEM

Donald L. Manning, 4002 Normanwood Dr., Orchard Lake, Mich. 48033

Filed Sep. 20, 1979, Ser. No. 77,467
Int. Cl.³ B60G *11/26*
U.S. Cl. 280—711 **10 Claims**



1. A suspension system for a vehicle of the type wherein the driver's position and a front door are generally transversely aligned at the front end of the vehicle main body and the steerable front wheels are disposed on the body immediately rearwardly of the driver position and front door, said suspension system comprising:

an underbody extending substantially throughout the length and width of said main body, said underbody including

a first transverse beam disposed subadjacently rearwardly of the driver position and front door,

a second transverse beam spaced rearwardly of said first transverse beam,

a third transverse beam spaced rearwardly of said second transverse beam;

a sub-frame including

a transverse axle member parallel to and disposed intermediate said first and second transverse beams,

a pair of side frame members extending respectively from spaced points along the length of said axle and converging to form an apex longitudinally spaced from said axle member,

pivotal joint means connecting the apex of said sub-frame to said third transverse beam,

a pair of wheel spindles pivotally mounted to the respective ends of said axle members and rotatably supporting the steerable front wheels,

a cross beam element interconnecting the side frame members and disposed proximate said second transverse beam,

means for limiting lateral movement of said sub-frame relative to said underbody, and

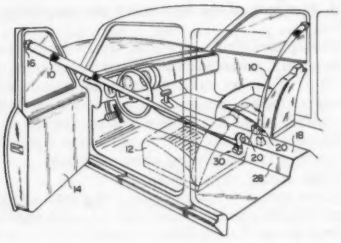
a pneumatic mechanism mounted between the cross beam element of said sub-frame and the underbody to permit vertical adjustment of the front end of the underbody relative to the sub-frame axle.

4,248,456

SEATBELT SYSTEM

Masanao Motonami; Jun Yasumatsu, both of Aichi, and Tatsushi Kubota, Okazaki, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Kabushiki Tokai-Rika-Denki Seisakusho, both of Aichi, Japan

Filed May 8, 1979, Ser. No. 37,152
Claims priority, application Japan, Sep. 18, 1978, 53-127717[U]
Int. Cl.³ B60R *21/10*
U.S. Cl. 280—802 **12 Claims**



1. A seatbelt system for motor vehicles which automatically fastens or unfastens a seatbelt around a passenger which includes a passenger restraining belt and a retractor mechanism which power retracts said passenger restraining belt located at and coupled to an approximate center line of said motor vehicle, said seatbelt system being characterized by a direct locking device provided separate from and below said retracting mechanism and coupled to said vehicle body for directly locking an intermediate portion of said restraining belt during a vehicular emergency whereby the anchor point for said seatbelt is lowered during a vehicular emergency.

4,248,457

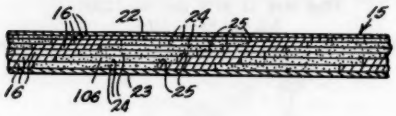
BONDING STRUCTURE FOR MANIFOLD ASSEMBLIES

Frank W. Torbeck, 8529 Concord Hills Circle, Cincinnati, Ohio 45243

Filed Nov. 24, 1978, Ser. No. 963,303
Int. Cl.³ B41L *5/04*
U.S. Cl. 282—7 **6 Claims**

1. In a manifold assembly comprising a series of superimposed sheets each sheet having a margin to maintain the sheets in registry, the combination of an outer sheet having an imper-

forate margin, intermediate sheets each having a row of longitudinally spaced holes formed in the margin, the holes in the margins of the intermediate sheets being in registry and progressively offset longitudinally to expose (a) flat surface portion of each intermediate sheet adjacent each hole to the imper-



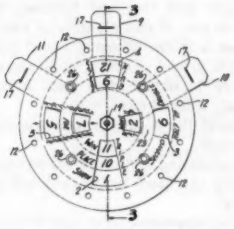
forate margin of the outer sheet and form a number of stepped, adhesive receiving openings in the margins of said intermediate sheets, and a line of adhesive entered into said openings and in contact with the margin of the outer sheet and bonding the assembly together along the margins of all the superimposed sheets.

4,248,458

RANDOM RACE WINNER SELECTOR DEVICE

Samuel M. Brody, 1417 N. Prospect Ave., #201, Milwaukee, Wis. 53202

Filed May 29, 1979, Ser. No. 42,989
Int. Cl.³ B42D *15/00;* **G06C** *17/00*
U.S. Cl. 283—1 R **9 Claims**



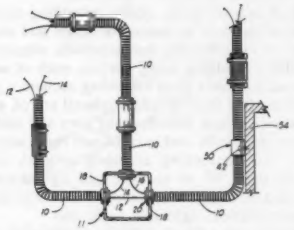
1. A race selector apparatus for selecting expected winners from individual participants in a plurality of sequentially run races, comprising a first element having a participant identifying sectors bearing indicia representing the individual participants, a second element having second sectors bearing similar indicia representing the several individual participants in the race, and a third element having third sectors bearing similar indicia representing the several individual participants in the race, a cover means having a plurality of presentation opening means spaning different portions of said elements and thereby different combinations of said sectors and means to cover and expose said opening means, means mounting said three elements adjacent each other with said sectors spaced from each other for movement relative to each other for aligning of different sectors, and means for positioning of said elements with respect to each other and said cover means and including index means for locating the sectors aligned with said presentation opening means with said opening means effectively closed, whereby the user locates the several elements in any one of the permitted positions for aligning of different sectors with the different presentation opening means and then effectively exposes said presentation opening means to determine randomly selected combination of participants in said plurality of opening means.

4,248,459

FLEXIBLE CONDUIT SYSTEM

Harold T. Pate, Cleveland, and Helmut P. Fochler, Chagrin Falls, both of Ohio, assignors to Indian Head Inc., New York, N.Y.

Filed Feb. 6, 1978, Ser. No. 875,229
Int. Cl.² F16L *21/06, 47/00*
U.S. Cl. 285—319 **4 Claims**



1. A synthetic resin connector clamp for interconnecting two sections of corrugated tubing to each other in end-to-end relation comprising:

a medial cylindrical body portion having an outer peripheral wall;

a first split-jawed clamping portion connected to one end of said cylindrical body portion;

a second split-jawed clamping portion connected to the opposite end of said cylindrical body portion from the first split-jawed clamping portion;

each of said first and second split-jawed clamping portions comprising:

a first movable jaw having a first end and a second end, and further having an inner side and an outer side, said first movable jaw having a plurality of arcuate corrugations thereon between the ends thereof and each lying in a plane extending substantially normal to the axis of the medial cylindrical body portion and disposed on the inner side of said first movable jaw which is closest to the projected axis of said medial cylindrical body portion, said first movable jaw further characterized in defining a first recess positioned between a pair of shoulders spaced axially along the outer side of said first movable jaw, and wherein that one of said shoulders which lies nearest said medial body portion constitutes the terminus of an axially sloping arcuate rib sloping from that one shoulder radially inwardly with respect to the axis of said medial body portion and axially toward said medial body portion;

a first flexible hinge portion flexible connecting said first end of said first movable jaw to the respective adjacent end of said body portion to facilitate movement of the jaw between a position in which it extends substantially parallel to the projected axis of the medial cylindrical body portion, and a position in which it extends at an angle to said axis;

a second movable jaw spaced from said first movable jaw and having a first end, a second end, an inner side and an outer side, said second movable jaw having a plurality of arcuate corrugations thereon each lying on the inner side of said second movable jaw which is closest to the projected axis of said medial cylindrical body, and each lying in a plane extending substantially normal to the axis of the medial cylindrical body portion, said second movable jaw further characterized as defining a recess positioned between a pair of shoulders spaced axially along the outer side of said second movable jaw, and wherein that one of said shoulders on said second jaw which lies nearest said medial body portion constitutes the terminus of a second axially sloping arcuate rib

sloping from said one shoulder radially inwardly with respect to the axis of said medial body portion and axially toward said medial body portion;

a second flexible hinge portion flexible connecting said first end of said second movable jaw to the respective adjacent end of said cylindrical body portion to facilitate movement of said second jaw from a position in which it extends substantially parallel to the axis of the medial cylindrical body portion, to a position in which it extends at an angle thereto; and

a pair of spaced, rigid, axially extending semicylindrical side walls each positioned between said movable jaws and co-cylindrically and coaxially aligned with said medial cylindrical body portion, each of said first and second movable jaws extending arcuately around, and forming less than 90° of peripheral arc of, a cylindrical structure which includes said jaws and said semicylindrical side walls, and each of said rigid, semicylindrical side walls extending arcuately around, and forming more than 90° of arc of, said cylindrical structure formed by said first and second movable jaws and said semicylindrical rigid side walls; and

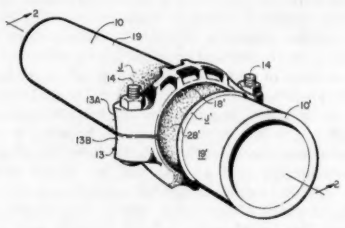
a pair of annular collars slidably surrounding said medial cylindrical body portion, and movable into positions surrounding the generally cylindrical structures defined by said movable jaws and semicylindrical side walls when said movable jaws are positioned substantially parallel to the projected axis of the medial cylindrical body portion.

4,248,460

PLASTIC PIPE FITTING

Coyt E. Murray, P.O. Drawer 12427, Gastonia, N.C. 28052, and Jack L. Workman, 1745 Woodvale Rd., Charleston, W. Va. 25314

Filed Dec. 15, 1977, Ser. No. 860,880
Int. Cl.[2] F16L *23/00*
U.S. Cl. 285—363 **39 Claims**



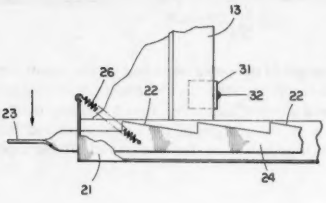
1. Means for connecting lengths of plastic pipe having a given flexural modulus with a mechanical coupling having a higher flexural modulus than the said given flexural modulus of the plastic pipe whereby the plastic pipe has an objectionable tendency to cold flow or move relative to the mechanical coupling responsive to changes in temperature and pressure, said means comprising a plastic pipe fitting with a joining portion extending inwardly from a first end of said plastic fitting for attachment to the length of plastic pipe and a connecting portion extending inwardly from a second end of said plastic fitting for attachment to the mechanical coupling, said first end of the fitting having a flexural modulus sufficiently the same as the said given flexural modulus of the plastic pipe to enable a reliably effective connection of the first end of the fitting to the plastic pipe as by butt fusion, and the flexural modulus of the plastic fitting gradually increasing from the first end of the fitting toward the second end of the fitting, and the connecting portion at the second end of the fitting being shaped to conform with the mechanical coupling and having a higher flexural modulus than the first end of the fitting and sufficiently the same as the flexural modulus of the mechanical coupling to enable a reliably effective connection without the said objectionable tendency to cold flow or move relative to the mechanical coupling responsive to changes in temperature and pressure.

4,248,461

SLIDING DOOR LOCKING APPARATUS

C. Jim Stevens, 8702 W. Morris St., Indianapolis, Ind. 46231

Filed Mar. 22, 1979, Ser. No. 22,939
Int. Cl.[3] E05C *3/14*
U.S. Cl. 292—218 **6 Claims**



1. A lock, in combination with a sliding door, said door having a door frame and a slidable door panel movable between a closed position and a fully opened position, said lock comprising:

(a) a housing member mounted to the base of the door frame;

(b) catch means pivotally attached to said housing, said catch means being disposed in a normally raised position and including a plurality of catches which project vertically upward;

(c) depression means for depressing said catch means to a lowered position;

(d) a blocking member mounted to the slidable door panel and arranged such that said blocking member makes contact with one of said plurality of catches when said catch means is in the normally raised position and said door panel is in said closed position thereby preventing movement of the slidable door panel from a closed position to a fully opened position;

(e) a horizontally flat pedal portion secured to one end of said catch bar;

(f) a spring connecting said catch bar to said housing, said spring urging said catch bar toward said normally raised position; and

(g) alarm means responsive to an axial force applied to said catch bar, such that if a sufficient axial force is applied to said catch bar, said alarm means produces an alarm signal.

4,248,462

BINDING AND SEALING STRIP

Gwang H. Choi, Seoul, Rep. of Korea, assignor to Ben Clements & Sons, Inc., South Hackensack, N.J.

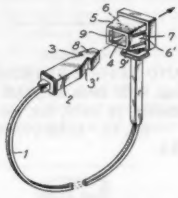
Filed Jan. 19, 1979, Ser. No. 4,955
Claims priority, application Rep. of Korea, May 12, 1978, 2549
Int. Cl.[3] B65D *33/34*
U.S. Cl. 292—322 **5 Claims**

1. A lockable and unreleasable binding and sealing strip, comprising a flexible cord;

a latch member at one end of and integral with said cord, said latch member having a head part having side faces in the shape of an arrowhead and having a pair of triangular notches forming acute-angled corners with said side faces;

a locking frame at the other end of and integral with said cord, said frame being essentially tubular and having a pair of opposing side walls and a mouth for reception of said head part with minimal clearance, each of said side walls having a U-shaped slot therein forming an element the exterior of which is normally essentially coplanar with said wall and having a flexible root biasing said element

inwardly of said mouth, said element being shaped in section perpendicular to said side wall for lodging in one of said notches and being disposed relative to said mouth so that said element is initially displaced outwardly of said side wall by rotation around said root on insertion of said latch member into said mouth and is moved inwardly by said biasing root into engagement with said notch as said



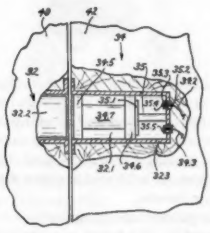
head part passes said element, said notch of said arrowhead lying within said essentially tubular frame when engaged with said element for preventing disengagement of said element from said notch, said notch being so shaped that attempt to retract said latch member from said frame produces no outward force against said element, whereby said latch member is locked unreleasably into said frame by lodgement of said element in said notch.

4,248,463

SECURITY SYSTEM

William Hand, 805 Mackinaw Ave., Calumet City, Ill. 60409

Filed Aug. 31, 1978, Ser. No. 938,449
Int. Cl.³ E05C *13/10*
U.S. Cl. 292—340 **8 Claims**



1. A security system for encouraging an occupant of a motel or hotel room or the like equipped with a deadbolt lock to lock the room door with the deadbolt, and comprising relay means for selectively enabling or disenabling electric circuitry in the room, and sensing and control means for sensing whether a deadbolt is in its unlocked position and responsibly controlling the relay means to disenable the circuitry when the deadbolt is in the unlocked position.

4,248,464

LOG HANDLING FORK

Eston F. Cross, 6201 Robertson Ave., Nashville, Tenn. 37209

Filed Jan. 7, 1980, Ser. No. 110,352
Int. Cl.³ A47F *13/08*
U.S. Cl. 294—9 **6 Claims**

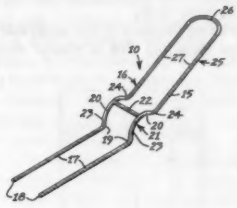
1. A fork device for handling a log comprising:

(a) an elongated body member including a front portion, an intermediate handle portion, and a rear handle portion,

(b) said front portion consisting of a pair of longitudinally extending parallel tines having rear ends and spaced apart a distance less than the cross-sectional dimension of a log adapted to be received longitudinally upon said tines,

(c) said intermediate handle portion comprising a handle bar member extending transversely of the longitudinal axes of said tines,

(d) said handle bar member being spaced above and behind the rear ends of said tines, sufficiently to provide clearance between an operator's hand grasping said handle bar member and a log in its rearmost position on said tines,



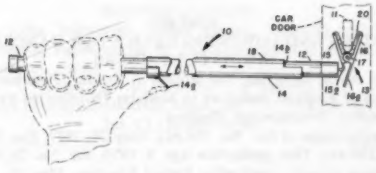
(e) said rear handle portion having a rear handle member spaced behind said transverse handle bar member sufficiently to provide adequate leverage counterbalancing the load of a log seated on said tines when the operator's other hand grasps said rear handle member.

4,248,465

AUTOMOBILE DOOR LOCK OPERATING TOOL

William M. Halstead, 5484 Cedar La., Columbia, Md. 21044

Filed Mar. 22, 1979, Ser. No. 22,772
Int. Cl.³ B25J *1/00*
U.S. Cl. 294—19 R **6 Claims**



1. A tool for enabling a person to operate the door lock member of an automobile or like vehicle from a remote position inside the vehicle, comprising:

a handle shaft member, and

a head member affixed to one end of the handle shaft member for resiliently grasping the door lock member to operate said door lock member between its lock and unlock positions,

said head member being formed with a substantially V-shaped recess positionable to receive said door lock member, said V-shaped recess being lined with resilient material to resiliently grasp said door lock member when said door lock member is received within said V-shaped recess.

4,248,466

SNOW SCOOP WITH WEAR STRIP ALONG LIP AND METHOD OF ATTACHING THE WEAR STRIP IN A BLOW MOLDING PROCESS

William B. Carper, c/o McCaleb, Lucas & Brugman 230 W. Monroe St., Ste.-2040, Chicago, Ill. 60606

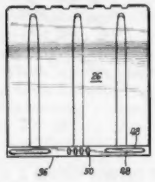
Filed Nov. 13, 1978, Ser. No. 959,486
Int. Cl.³ E01H *5/02*
U.S. Cl. 294—54 **8 Claims**

1. In a snow removal device, a scoop comprising a housing made of plastic material having a bottom wall, left and right side walls, a back wall, and a lip along a leading edge portion of said bottom wall opposite said back wall;

said leading edge portion being reinforced on the underside by an elongated, ground-engaging wear strip;

said wear strip having an elongated slot extending lengthwise thereof in each of the left and right end portions respectively, said slots extending along said leading edge portion of said bottom wall and having outer ends closely adjacent to the left and right ends of the wear strip, said slots having inner ends adjacent one another in the center portion of the wear strip;

said wear strip being fastened to the underside of said housing by means including ribs of plastic material integral



with said leading edge portion of said bottom wall extending through said slots and having widened flanges engaging bottom surfaces of the wear strip alongside the slots enabling limited inward sliding movements of the ribs lengthwise of the wear strip as the plastic material cools and contracts following a molding operation during which said ribs are extruded through said slots; and

the inner ends of said ribs being spaced from the inner ends of said slots to provide recesses to receive said inner ends of the slots during said inward sliding movement of the ribs.

4,248,467

LIFTING AND LOWERING DEVICE FOR HANDLING GOODS CONTAINERS

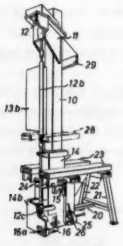
David Allen, Kettering, and Robert J. Rowley, Peterborough, both of England, assignors to Modular Distribution Systems Limited, Peterborough, England

Continuation of Ser. No. 798,861, May 20, 1977, Pat. No. 4,148,511. This application Apr. 9, 1979, Ser. No. 28,373

Claims priority, application United Kingdom, May 21, 1976, 21146/76; Jan. 26, 1977, 3152/77

Int. Cl.[3] **B66F** *7/16*

U.S. Cl. 294—67 R **4 Claims**



1. A lifting and lowering device for attachment to a goods container having ISO castings or the like fitments, the device comprising a hollow post, a leg slidably housed within the post and having a foot for contacting the ground when lifting or lowering the container, power-operated means connected to effect sliding of the leg relative to the post, upper and lower twist locks carried by the device on one side thereof for lockably engaging the ISO castings or the like of a container to which the lifting and lowering device is to be attached, one of said twist locks being adjustable in position length-wise of the post, said upper twist lock being rotatable between a locked position and an unlocked position, operating means mounted on the post spaced below the upper twist lock and connected to it to effect rotation of the upper twist lock between said locked and unlocked positions, means engagable by a mechanical machine to enable the device to be positioned on a container, and ground-engaging means mounted on the device and adapted when the leg is retracted to contact the ground at positions off-set from the foot to render the device stable when free-standing.

4,248,468

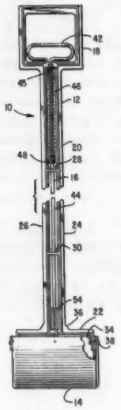
LITTER AND REFUSE RETRIEVAL DEVICE

Edward L. Hastings, 4025 Dean Dr., Oak Lawn, Ill. 60453

Filed Oct. 10, 1979, Ser. No. 83,375

Int. Cl.[3] **A01K** *29/00*

U.S. Cl. 294—1 BA **1 Claim**



1. A refuse retrieval device which includes: an elongated frame member having a handle section at one end, scoop supporting arms at the other end and an elongated central section therebetween; scoop means mounted to said supporting arms; and control rod means carried by said frame member and positioned to cooperate with said scoop means for opening and closing said scoop means;

wherein the improvement comprises:

(a) said retrieval device being constructed for one-handed operation and;

(b) said frame member being a unitary, elongated, molded-plastic member, which is substantially planar and flexible, and (i) said central section is constructed of a pair of elongated parallel beam members and a plurality of apertured transverse rigidifying braces connecting said beam members, said beam members defining an open slot therebetween; (ii) said handle section being integral with the central section and having an open box-like shape and capable of being flexed with respect to said central section; and (iii) said scoop supporting arms extending from said central section and being integral therewith;

(c) said scoop means having two half sections which define a clam shell-like shape with closed sidewalls, and said sidewalls being pivotally connected to said scoop supporting arms;

(d) said control rod means including an elongated rod having an actuating handle integral with one end thereof, said control rod extending through said slot in said central section and said apertured braces to a position adjacent said scoop means and said actuating handle being positioned within the plane of said frame handle section;

(e) link means for connecting the end of the control rod to each of said scoop sections;

(f) spring-biasing means positioned within said central sec-

tion and said control rod extending therethrough for cooperation therewith in biasing said scoop sections to a normally closed position;

(g) collar means secured to said control rod adjacent the lower end of said spring-biasing means for cooperation with said rod and said spring-biasing means;

(h) said frame member, spring-biasing means, control rod, and link means constructed so as to permit one-handed operation by maintaining the scoop means in a normally-closed position when said control rod is not retracted and to permit said scoop means to be controllably opened and closed as said control rod is controllably retracted and released; and wherein

(i) said frame handle section is adapted to be pivoted from the plane of said frame member so as to permit insertion of said control rod into said central section during fabrication.

4,248,469

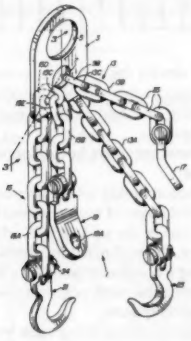
LIFTING HARNESS

Norman C. Knox, Rt. 1, Box 906, Queen Creek, Ariz. 85242

Filed Jul. 10, 1979, Ser. No. 56,336

Int. Cl.[3] B66C *1/14*

U.S. Cl. 294—78 A **2 Claims**



1. A lifting harness comprising in combination:

a. first and second load bearing chains each having first and second end links, respectively;

b. first and second hooks connected to the first end links, respectively, of said first and second load bearing chains for engaging heavy objects to be lifted by said lifting harness;

c. first and second clevises connected to the second end links, respectively, of said first and second load bearing chains, each of said first and second clevises having therein a bolt hole for receiving a bolt for attaching said first and second clevises to a heavy object to be lifted by said lifting harness; and

d. a chain supporting plate composed of hot rolled steel for supporting said first and second loading bearing chains and being approximately one-fourth of an inch in thickness, said chain supporting plate having therein

i. an upper hole for receiving a support hook or the like from a crane, block and tackle assembly, or the like, whereby the support hook supports said lifting harness;

ii. a lower hole through which the links of either of said first and second load bearing chains can be sequentially passed, said lower hole being separated from said upper hole by a portion of plate material of said chain supporting plate, which portion substantially strengthens said chain supporting plate;

iii. first and second link receiving slots for receiving selected links of said first and second load bearing chains, respectively, said first and second link receiving slots each opening into and extending generally downward from a lower edge of said lower hole, each of said first and second link receiving slots extending entirely through the thickness of said chain supporting plate, each of said first and second link receiving slots having a length and width which allow that link receiving slot to receive two opposed sides of the selected link and prevent either link adjacent to the selected link from being drawn through that link receiving slot said first and second link receiving slots extending radially from said substantially circular opening, said first and second link receiving slots extending at substantially equal angles from a vertical direction;

wherein said lower hole includes a substantially circular opening sufficiently large to allow at least one of said clevises or one of said hooks attached to the end links of each of said first and second load bearing chains to be drawn through said substantially circular opening to permit the first and second load bearing chains to be removed from said chain supporting plate;

said first and second clevises each including a first portion having therein one of said bolt receiving holes and a second portion inclined with respect to said first portion, the second portion being connected to an end link of one of said first and second load bearing chains;

whereby an object to be lifted can be connected to said lifting harness by means of either clevises or hooks, and whereby the orientation of the object to be lifted can be controlled by appropriately selecting which link of each load bearing chain is placed into the first and second load receiving slots, respectively.

4,248,470

BOTTLE CARRIER

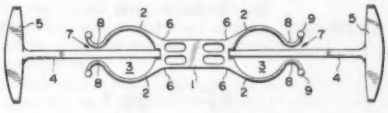
Takuo Yuda, Yokohama; Toshie Tanaka, Machida, and Koji Watanabe, Fujisawa, all of Japan, assignors to Nifco Inc., Yokohama, Japan

Filed Jan. 10, 1980, Ser. No. 110,963

Claims priority, application Japan, Jan. 12, 1979, 54/1111[U]

Int. Cl.[3] B65D *71/00*

U.S. Cl. 294—87.2 **1 Claim**



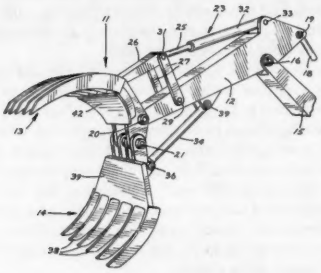
1. A bottle carrier, which comprises a main carrier body substantially of the shape of a plate, retaining parts each formed of a pair of opposed arms and extended outwardly from the corners of the longitudinal edges of said main carrier body, legs extended from the opposite longitudinal edges of said main carrier body and allowed to thrust out through spaces intervening between the opposed leading ends of the respective arms, and separators formed one each at the tips of the legs, with all the aforementioned component parts formed within one substantially flat plate, said retaining parts having the leading portions of the respective arms bent arcuately in the backward direction to give rise to engaging pieces, said legs having the respective basal portions formed in a decreased wall thickness to give rise to hinge portions which allow said legs to be folded downwardly and said separators at the leading ends of said legs to be brought into contact with the barrel portions of bottles, and said parts of opposed arms of said retaining parts being adapted to be wrapped around the neck portions of the bottles and fastened thereto by having said engaging pieces thereof twisted around each other to bind the bottles to each other.

4,248,471

BACKHOE GRAPPLE ASSEMBLY

Roy E. LaBounty, 1607 Eighth Ave., Two Harbors, Minn. 55616

Filed Sep. 17, 1979, Ser. No. 76,220
Int. Cl.[3] B66C *3/16*
U.S. Cl. 294—88 **6 Claims**



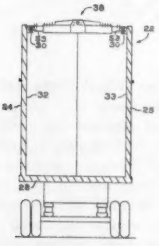
1. An improved grapple assembly for a backhoe of the type having a swinghouse, a boom on the swinghouse pivotal about a horizontal and vertical axis and a forwardly extending stick pivotally mounted on the boom for pivotal movement about a horizontal axis, the grapple assembly comprising an upper grapple jaw pivotally attached near its inner end to the outer end of the stick, a lower grapple jaw pivotally attached at its inner end to the inner end of the upper jaw, hydraulic means pivotally mounted on the stick and operably connected to the upper jaw for effecting pivotal movement of the upper jaw, and pivotal brace means mounted on the stick and pivotally connected to the lower jaw for allowing pivotal movement of the lower jaw in response to movement of the upper jaw.

4,248,472

BOW AND SPREADER BAR

William J. Brown, Lower Burrell, and James R. Rowley, Freeport, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 911,598, Jun. 1, 1978, Pat. No. 4,188,168. This application Jul. 3, 1979, Ser. No. 54,756
Int. Cl.[3] B62D *27/00*
U.S. Cl. 296—36 **2 Claims**



1. A spreader and bow bar in combination with a trailer when the trailer is of the type having a deck, a pair of spaced walls mounted on the deck and means mounted on the walls for supporting bow bars, wherein the spreader and bow bar comprises:

a rigid elongated body having a center portion and opposed end portions;

means mounting said body and coacting with said support means for mounting said spreader and bow bar between the walls of the trailer to aid in maintaining the walls in spaced relation to one another; and

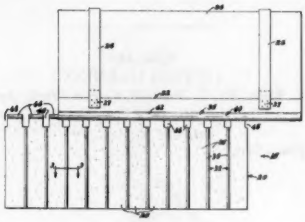
a plurality of upright portions on said rigid elongated body for receiving a pair of slings and maintaining the slings spaced from one another, selected ones of said upright portions having a height relative to one another to provide a slope between the center portion and end portions of said body.

4,248,473

SUN-SHADE AUXILIARY DEVICE FOR VEHICLE

Otto J. Hildebrand, 809 Tecumseh, Indianapolis, Ind. 46201

Filed Mar. 16, 1979, Ser. No. 21,002
Int. Cl.[3] B60J *3/00*
U.S. Cl. 296—97 G **10 Claims**



1. A sun-shade device for a vehicle, comprising:

an elongated support mount body member;

means supporting the said support mount body member from the vehicle;

a plurality of panel members having opposite edges parallel to one another;

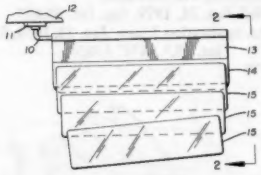
first interconnection means which interconnect each one of the said parallel edges of each one panel respectively with the adjacent one of the said parallel edges of the adjacent panel member, the said panel members so interconnected thus providing a composite panel means whose respective portions are movable with respect to one another about a plurality of parallel axes;

said interconnection means being such as to permit relative rotation of the adjacent interconnected panel members about the axis of their interconnection means; and

second interconnection means which interconnect each panel member of the composite panel means to the said support mount body member in a manner which permits translatory movement of the composite panel means relative to the said support mount body member and also relative rotation of the said composite panel means with respect to the said support mount body member about the axis of said translatory movement;

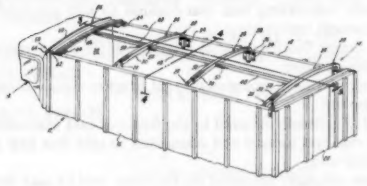
the overall length of the composite panel means, as provided by the plurality of individual panel members, being substantially no more than the overall length of the elongated support mount body member, and the entirety of the individual panel members being individually of a width substantially less than the overall length of the elongated support mount body member, thus providing that the composite panel means will have substantially no extension outwardly of the elongated support mount body member unless the composite panel means is translated along the axis of the second interconnection means, that translatory movement of the composite panel means thus incrementally exposing the individual panel means outwardly of the elongated support mount body member to a position, clear of said body member, in which individual ones of an adjacent pair of said individual panel members may be relatively rotated about the axis of the first interconnection means between the pair of individual panel members.

4,248,474
MAGNETIC SUN VISOR ATTACHMENT
Ann Mandrick, 659 Perkins Dr., Warren, Ohio 44483
Filed Aug. 15, 1979, Ser. No. 66,642
Int. Cl.³ B60J *3/00*
U.S. Cl. 296—97 G **4 Claims**



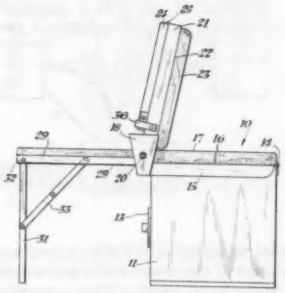
1. A magnetizable sun visor attachment for a vehicle visor comprising in combination a section of magnetizable material on said visor and at least one section of shaded transparent magnetizable material for self-adhering relation to said section of magnetizable material on said visor, said shaded transparent magnetizable material comprising a sheet of transparent plastic having a known quantity of a magnetizable material therein so as to reduce light transmission through said sheet of plastic by at least 25%.

4,248,475
BOW ASSEMBLY FOR TRUCK BED COVERS
Walter Johnsen, Aurelia, Iowa 51005
Filed Jan. 11, 1979, Ser. No. 2,665
Int. Cl.³ B62D *25/06*
U.S. Cl. 296—100 **4 Claims**



1. A bow assembly for supporting a flexible cover on an open top cargo box on a truck or trailer where such box includes spaced upright sideboards, a front wall and a rear wall, said assembly comprising:
- a plurality of knockdown bow units adapted to be removably mounted on a cargo box transversely of the longitudinal axis thereof and in spaced relationship relative to said longitudinal axis,
- each bow unit comprising:
  - a pair of opposed end sections,
  - respective opposed means on said sideboards for removably receiving and supporting said end sections,
  - an arcuate bow,
  - said bow being disposed intermediate said end sections and removably telescopically slidably coupled thereto to accommodate flexing of said sideboards as cargo is loaded and unloaded,
  - a removable rigid link means interconnecting each bow with an adjacent bow,
- an elongated arcuate headboard having a curvature complementary to that on said bows and adapted for mounting on said front wall so as to extend intermediate said sideboards in spaced relationship to said bows,
- one of said respective rigid link means being removably secured to said respective headboard and an adjacent bow,
- said rigid link means being longitudinally aligned relative to the apex of the curvature on said bows, and
- a water deflector means on said headboard for directing water towards and off of said respective sideboards.

4,248,476
CONVERTIBLE SEAT ASSEMBLY
Melvin B. Phelps, 700 SE. 32nd Ct., Ft. Lauderdale, Fla. 33316
Filed Dec. 11, 1978, Ser. No. 968,079
Int. Cl.³ A47C *13/00*
U.S. Cl. 297—118 **5 Claims**

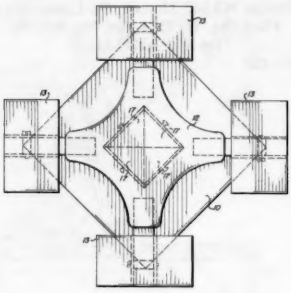


1. A seat assembly which is convertible from a single seat into back-to-back seats, comprising:
- a main seat base member, said main seat base member having a front surface, a back surface, a first side and a second side,
- a first seat bottom connected to said base member by a hinge means,
- a first seat bottom frame member connected to said first seat bottom
- a first brace member connected to said first seat bottom adjacent said seat base member first side,
- a second base member connected to said first seat bottom adjacent said seat base member second side,
- a seat back metal frame member pivotally mounted to said first and second brace members,
- each said first and second brace member having a front and back lip means for limiting arcuate travel of said seat back frame member,
- a first seat back connected to said seat back frame member,
- a second seat back connected by a hinge means to said seat back frame, said second seat back facing the opposite direction from said first seat back, and
- a second seat bottom frame member pivotally mounted to said first and second braces,
- a second seat bottom connected to said second seat bottom frame member, and
- a seat support member pivotally mounted to said second seat bottom.

4,248,477
FURNITURE CONSTRUCTION
Elbert Netters, P.O. Box 25534, Phoenix, Ariz. 85002
Filed Aug. 25, 1978, Ser. No. 936,760
Int. Cl.³ A47B *39/00*
U.S. Cl. 297—135 **1 Claim**

1. A furniture construction comprising
(a) a unitary base,
(b) supports, attached at the lower ends to said base such that said supports maintain a constant fixed position with respect to said base, rising upwardly and outwardly from said base and defining a first central area of free space within said supports and a second peripheral area of free space outside and beneath said supports,

(c) individual table top work surfaces attached to the upper ends of said supports and evenly spaced about the center of said table, each of said work surfaces being separate from the other of said work surfaces, said second peripheral area of free space permitting at least a portion of a chair to be positioned directly beneath each of said upper ends,



(d) at least one support member positioned within said first central area of free space and interconnecting said supports, said support member being generally parallelably disposed with respect to said unitary base, and

(e) a table member rotatably mounted in said support member and said base.

4,248,478

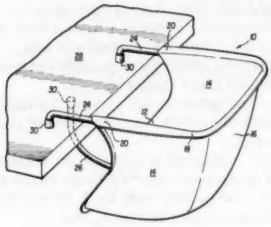
SELF-SUPPORTING INFANT CHAIR

Leonard Aron, 2390 Janis, Palm Springs, Calif. 92262

Filed Jul. 24, 1979, Ser. No. 60,180

Int. Cl.[3] **A47B** *39/00*

U.S. Cl. 297—174 **15 Claims**



1. An infant chair adapted to be self-supporting from a horizontally disposed table surface, comprising:

a seat portion and a pair of sidewall portions;

first support arm means projecting outwardly from said sidewall portions of said chair;

second support arm means projecting outwardly from said seat portion of said chair;

solid thickened portions integrally formed with said pair of sidewall portions and said seat portion constituting the sole support means for said first and second support arm means, respectively;

free end portions of said first and second support arm means defining a horizontal channel therebetween within which said table surface is to be disposed and for engaging the upper and under surfaces of said table respectively; and

the other end portions of said first and second support arm means being fixedly embedded within said solid thickened portions of said seat and sidewall portions of said chair and having means thereon for preventing longitudinal and rotational movement within and relative to said solid thickened portions of said seat and sidewall portions of said chair.

4,248,479

RECLINING SEAT FOR VEHICLE

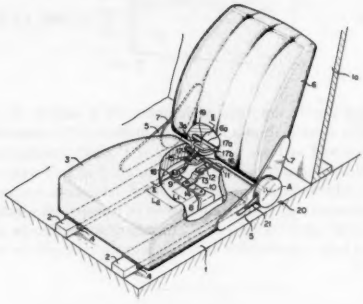
Eiji Toda, Hirakata, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Jun. 21, 1979, Ser. No. 50,617

Claims priority, application Japan, Jun. 22, 1978, 53-84819[U]

Int. Cl.[3] **A47C** *1/024*

U.S. Cl. 297—378 **3 Claims**



1. In a reclining seat for a vehicle including a pair of rails fixedly secured to a vehicle frame, a seat-cushion slidably mounted on said rails, said seat-cushion having a frame mounted therein, a seat-back adapted to be inclined independently of and relative to said seat-cushion, said seat-back including a frame mounted therein, and connecting means for mechanically connecting said seat-cushion to said seat-back, the improvement comprising:

bracket means fixedly secured to said vehicle frame under said seat-cushion;

a first link pivotally mounted on said bracket means at one end thereof;

a second link fixedly secured to the frame of said seat-cushion at one end thereof and connected to said first link at the other end;

rod means pivotally mounted on the other end of said first link means at the lower end thereof, said rod means moving in response to the movement of said seat-cushion; and

stop means fixedly secured to the frame of said seat-back, and movable in response to the inclination of said seat-back, the movement of said stop means being independent of the movement of said rod means, said stop means being adapted to contact the upper end of said rod means when said seat-back is rearwardly inclined to a maximum whereby the maximum inclination angle of said seat-back is automatically adjusted by changing the position of said seat-cushion.

4,248,480

LOCKING RAIL SUPPORTED ON FIXED VEHICLE PART

Antonin Koucky, and Rolf Krügener, both of Sindelfingen, Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 19, 1979, Ser. No. 49,873

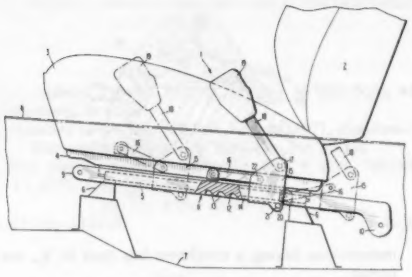
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1978, 2826634

Int. Cl.[3] **A62B** *35/00;* **A47C** *31/00*

U.S. Cl. 297—473 **3 Claims**

1. A locking rail for a motor vehicle seat, the motor vehicle seat including means for longitudinally and vertically adjusting the seat, a lever means pivotally connected to a seat frame of the adjusting means for operatively connecting the locking rail

to an end of a vehicle safety belt system, and means provided on a lower free end of the lever means for lockingly engaging the lever means to the locking rail upon a predetermined tensile stress on the safety belt system being exceeded, characterized in that means are provided for rigidly securing the locking rail to an underframe of the motor vehicle seat and a floor of



the vehicle, and in that means pivotally mounted on the lever means are provided for pivotally connecting the lever means to the seat frame so that a path traveled by a safety belt of the safety belt system during a longitudinal adjustment of the vehicle seat is maintained and only a slightly modified change in the path of the safety belt takes place during a vertical adjustment of the vehicle seat.

4,248,481

TUNNEL DRIVING APPARATUS WITH CUTTER ARMS INTERNAL AND EXTERNAL OF SUPPORT TUBE

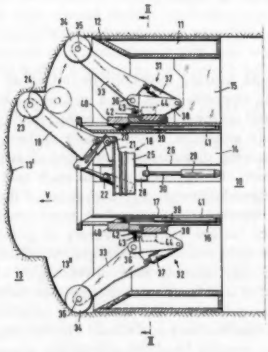
Wilhelm Stoltefuss, Kamen, Fed. Rep. of Germany, assignor to Gewerkschaft Eisenhütte Westfalia, Lünen, Fed. Rep. of Germany

Filed Aug. 13, 1979, Ser. No. 65,948

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1978, 2836131

Int. Cl.³ E21D *9/08*

U.S. Cl. 299—33 **17 Claims**



1. In a shield-type tunnelling apparatus having a shield containing a hollow support means with a first cutting appliance equipped with a first cutting means for removing material from a first working face, said first cutting appliance being mounted and supported interiorly of said support means, the improvement comprising:

said support means having a tubular configuration; said first cutting appliance being provided with a pivotal first arm movably carrying said first cutting means for effecting removal of material from a central region of the working face; and at least a second cutting appliance mounted by bearing means arranged externally on said support means to permit said second cutting appliance to move around said support means, said second cutting appliance having a pivotal second arm movably carrying a second cutting means for effecting removal of material from an outer region of the working face.

4,248,482

CURVED CONVEYOR SECTION GUIDE ASSEMBLY

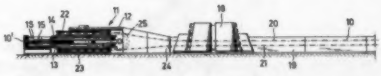
Helmet Truszczinski, Lunen, Fed. Rep. of Germany, assignor to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Aug. 2, 1979, Ser. No. 62,913

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1978, 2835391

Int. Cl.³ E21C *27/34*

U.S. Cl. 299—34 **12 Claims**



1. A mineral mining installation comprising a scraper-chain conveyor having a first straight conveyor portion, a second straight conveyor portion, a curved conveyor section connecting the two straight conveyor portions, and a guide assembly provided with means for guiding the scraper assembly of the scraper-chain conveyor round the curved conveyor section as well as with means for guiding a plough drive chain round the curved conveyor section, wherein the scraper assembly guide means comprises scraper assembly deflection rollers, and wherein the plough drive chain guide means comprises drive chain deflection rollers, the drive chain deflection rollers being co-axial with the scraper assembly deflection rollers.

4,248,483

END CUTTING UNIT FOR A MINING MACHINE

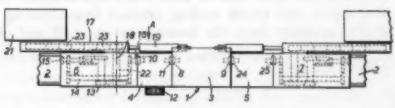
George A. Parrott, Wakefield, England, assignor to Dresser Europe SA, England

Filed May 14, 1979, Ser. No. 38,710

Claims priority, application United Kingdom, May 12, 1978, 19387/78

Int. Cl.³ E21C *27/24*

U.S. Cl. 299—53 **7 Claims**



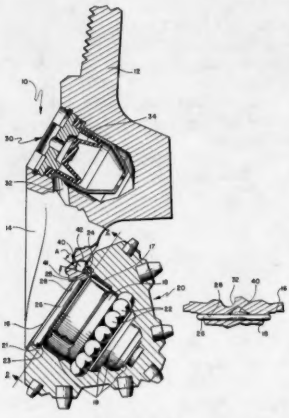
1. An end cutting unit for a mining machine, comprising a cutting unit body, a ranging arm carrying a drivable cutting device, said ranging arm being carried by the cutting unit body at a location towards a first end of the cutting unit body, and a transmission for transmitting drive to the cutting device, said transmission being provided with two drive couplings respectively at said first end and at the opposite second end of the cutting unit body whereby rotary drive can be transmitted to the transmission and hence to the cutting device from a selected one of said drive couplings, and the ranging arm being provided with means for enabling it to be set in a position, about which the arm can be ranged, in which the arm extends generally away from the end of the cutting unit body at which is located whichever drive coupling has been selected to impart rotary drive to the cutting device.

4,248,484

PRESSURE VENTING O-RING BEARING SEAL FOR ROCK BITS

Alan L. Newcomb, Rancho Palos Verdes, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Sep. 24, 1979, Ser. No. 78,370
Int. Cl.[3] F16C *33/74*
U.S. Cl. 308—8.2 **11 Claims**



1. A pressure venting rotary seal for use in sealed bearing rolling cutter rock bits to retain lubricant in a bearing cavity and to exclude harmful fluids and abrasives of the type that utilizes a ring-shaped elastomeric seal contained with peripheral sealing contact, in an annular rotary seal gland formed between a rolling cutter and a bearing surface of a journal, the improvement which comprises:

a seal race bore and a flange surface formed in said cutter, said bore being recessed into an open end of said bearing cavity in said cutter;

a seal race land and flange surface formed in said journal, said seal race bore and seal race land being adjacent one another in cooperating relationship forming said annular rotary seal gland when said cutter is rotatably mounted on said journal; and

said flange surface formed in said cutter that is in communication with said bearing cavity contains a venting pocket formed in said flange surface, said vent pocket being of suitable size and shape to permit excessive internal pressure within said rolling cutter rock bit to deflect a portion of the elastomeric seal to locally exit the annular rotary seal gland and break sealing contact thus venting said excess pressure from the bearing cavity, said seal elastically returns to a sealing position upon venting of said excess pressure.

4,248,485

EARTH BORING BIT WITH TEXTURED BEARING SURFACE

James E. White, Irving, and Santos Shields, Arlington, both of Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Oct. 1, 1979, Ser. No. 80,847
Int. Cl.[3] F16C *33/10*
U.S. Cl. 308—8.2 **1 Claim**

1. A bearing system for an earth boring bit, comprising:

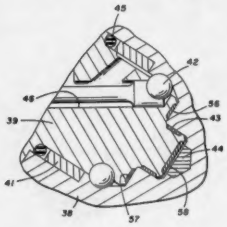
a bit body adapted to be connected to a rotary drill string;

at least one bearing pin extending from said bit body, with said at least one bearing pin including a bearing pin bearing surface;

a rotatable cutter mounted upon said at least one bearing pin, with said rotatable cutter including a cutter bearing surface;

a quantity of indentations on at least one of said cutter bearing surface and bearing pin bearing surface giving said surface a roughness greater than 20 R_a microinches and less than 80 R_a microinches;

substantially all of said at least one of said cutter bearing surface and bearing pin bearing surface not including said



indentations having a roughness less than 20 R_a microinches;

a lubricant reservoir in fluid communication with the area between said bearing surfaces; and

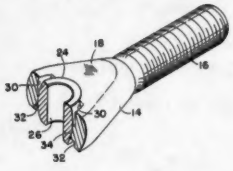
an uncontaminated lubricant in said reservoir.

4,248,486

SPHERICAL BEARING ASSEMBLY WITH STRESS RELIEF

Charles D. Bradley, Jr., Gobles, Mich., assignor to Pneumo Corporation, Boston, Mass.

Filed Dec. 15, 1978, Ser. No. 969,969
Int. Cl.[3] F16C *23/04*
U.S. Cl. 308—72 **8 Claims**



3. A spherical bearing assembly including an outer race member having opposite faces and a concave spherical inner race surface, and an inner ball-like member having a complementary convex spherical outer bearing surface, said outer race member having diametrically opposed slots in each said face thereof with the opposed slots in each said face being substantially aligned diametrically with those of the other, said diametrically opposed slots extending transversely partially across said race surface axially inwardly of portions of said bearing surface to prevent the development of stress concentrations in said outer race member in the region of said slots, the slots in one of said faces extending approximately halfway across said race surface and the slots in the other of said faces extending less than halfway across said race surface thus leaving an annular contact band separating the aligned slots of opposite faces having a radius substantially corresponding to the radius of said race surface between said opposed slots in each said face.

8. A spherical bearing assembly including an outer race member having opposite faces and a concave spherical inner race surface, and an inner ball-like member having a complementary convex spherical outer bearing surface, said outer race member having diametrically opposed slots in each said face thereof with the opposed slots in each said face being substantially aligned diametrically with those of the other, said diametrically opposed slots extending transversely partially

across said race surface axially inwardly of portions of said bearing surface to prevent the development of stress concentrations in said outer race member in the region of said slots, the aligned slots of opposite faces being separated by an annular contact band having a radius substantially corresponding to the radius of said race surface between said opposed slots in each said face, said annular contact band having an axial length of approximately one-sixth the axial length of said race surface.

4,248,487

ROLLING BEARING

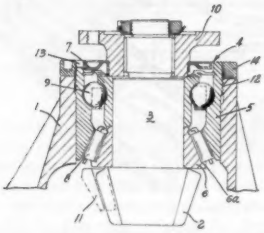
Sture L. Asberg, Partille, Sweden, assignor to SKF Nova AB, Gothenburg, Sweden

Continuation of Ser. No. 850,909, Nov. 14, 1977, abandoned. This application Feb. 26, 1979, Ser. No. 15,191

Claims priority, application Sweden, Dec. 1, 1976, 7613436; May 17, 1977, 7705758

Int. Cl.³ F16C *19/49, 23/06*

U.S. Cl. 308—189 R **1 Claim**



1. The combination comprising a housing, a shaft journal having a gear wheel at one end, a bearing assembly rotatably supporting the shaft journal in a cylindrical seat in said housing including a one-piece outer ring having threads on its outer periphery cooperating with threads in said cylindrical seat, means for rotating said outer ring to permit axial adjusting movement of said bearing assembly relative to said housing, an inner race ring on said shaft journal for each of said rows of rolling bodies, two rows of rolling bodies in the annular space between said rings spaced closely relative to one another, one of said rows comprising rollers having axes inclined at an angle to the bearing axis disposed adjacent said gear wheel, the other row of rolling bodies comprising balls which roll against raceways in the ring to provide angular contact disposed at the opposite end of the said shaft journal and a locking member engaging the threads of said outer ring to permit axial adjustment thereof relative to said housing and abutting said housing to lock said outer ring in a predetermined axial position in said housing.

4,248,488

QUICK DISCONNECT BEARING MOUNT FOR CONSTRUCTION MACHINERY

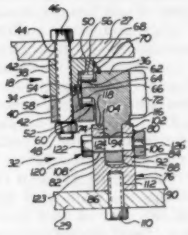
Harvey J. Sable, Hudson, Ohio, assignor to Rotek Incorporated, Aurora, Ohio

Filed Feb. 7, 1979, Ser. No. 10,006

Int. Cl.³ B66C *23/84*

U.S. Cl. 308—220 **16 Claims**

1. An apparatus such as a crane having a boom supporting upper structure connected to a bed structure by an annular anti-friction bearing which supports the upper structure for rotation about a generally vertical axis to swing the boom and transmits high radial, axial and moment loads from the upper structure to the bed structure, said bearing having first and second relatively rotatable ring members and anti-friction elements between said members, means for fastening said members to different ones of said structures comprising generally vertical lug means arranged about said axis of rotation and spaced retainer means spaced angularly about said axis for closely receiving said lug means, one of said lug means and retainer means being on one of said members and the other on one of said bed structure and upper structure and a plurality of locking elements spaced angularly about said axis and extending transversely thereof into and between said spaced retainer means and through said lug means for locking said lug means



and retainer means against separation, said locking elements being removably received in said retainer means and lug means to permit separation of said bed and upper structures upon removal of the locking elements, and means cooperating with each of said locking elements for releasably securing the elements in a locking position in said retainer and lug means.

4,248,489

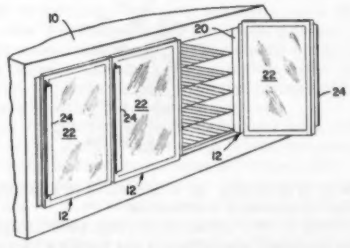
REFRIGERATOR DOOR STRUCTURE

Louis F. Barroero, 1585 Daniels Dr., San Leandro, Calif. 94577, and Socrates Dekas, 2631 School St., Oakland, Calif. 94602

Division of Ser. No. 869,519, Jan. 16, 1978. This application Jul. 10, 1979, Ser. No. 56,163

Int. Cl.³ F25B *47/00;* **A47B** *43/00*

U.S. Cl. 312—296 **9 Claims**



1. In a rectangular opening through the wall of a refrigerator compartment having a substantially flat exterior surface, said opening bounded by substantially horizontal upper and lower structural members spaced from each other a given vertical distance and by substantially vertical side structural members;

a. a starter mullion having a length slightly less than said given vertical distance and mounted substantially vertically along one side structural member of said opening by mounting means at each of its ends rigidly fixing said ends of said starter mullion to said upper and lower structural members of said opening;

b. a plurality of door structures individually mounted in said opening and each of said door structures comprising a mullion and a rectangular door hingedly mounted on said mullion, said rectangular door of each door structure having sides of common length greater than said given vertical distance and being of given common width with one side extending overlappingly along said mullion in alignment therewith, said mullion of each of said plurality of door structures having a length slightly less than said

given vertical distance and having means at each of its ends rigidly fixing said ends thereof to said upper and lower structural members of said opening with said mullion in a substantially vertical position within said opening, said mullion of a first one of said plurality of door structures being mounted in said opening adjacent said starter mullion and spaced therefrom a distance less than said given common width of said doors whereby the other side of said door of said first one of said plurality of door structures overlaps said starter mullion with the ends of said door overlapping said flat exterior surface of said refrigerator compartment in the closed position thereof, and the mullion of the remaining ones of said plurality of door structures being each serially mounted in turn along said upper and lower structural members of said opening spaced from the mullion of the preceding door structure a distance less than said given common width of said doors whereby the other side of said door of each of said door structure overlaps the mullion of said preceding door structure with the ends of each door overlapping said exterior surface of said refrigerator compartment; and

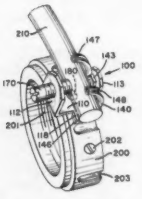
c. each of said door structures including a torsion rod means acting solely between said mullion and said door thereof to urge said door and mullion to the closed position thereof with respect to each other; whereby said starter mullion may be mounted along either end of said opening and said door structures individually inverted for either right-hand or left-hand hinged movement of said door thereof with respect to said mullion thereof.

4,248,490

LAY-IN LUG WITH CONDUCTION PAD

Walter W. Bachle, Harwinton, Conn., assignor to General Signal Corporation, Stamford, Conn.

Filed May 7, 1979, Ser. No. 36,916
Int. Cl.³ H01R *4/66*
U.S. Cl. 339—14 R **18 Claims**



1. A lay-in grounding lug to be secured to a bushing or the like, and comprising in combination:

(a) a body member fabricated of a high yield strength material for resisting deformation and having a back member from which top and bottom members extend from opposite limits of said back member;

(b) a low resistance conduction member including a first surface portion formed and selectively positioned for cooperative relationship with and support from said bottom member of said body member when said conduction member is positioned to overlay said bottom member, and said conduction member further including a second surface portion formed and positioned for cooperative relationship with said back member of said body member when said conduction member is selectively positioned as recited so that said second surface portion will make surface contact with the surface of any bushing, or the like, with which the lay-in grounding lug may be cooperatively associated;

(c) first clamping means cooperating with said body member for clamping the combination of said body member and said conduction member, when positioned as recited, to a bushing, or the like; and

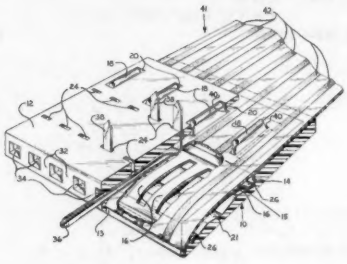
(d) second clamping means threadingly engaged with said top member and projecting towards said bottom member and said first surface portion of said conduction member whereby a wire laid over said first surface portion of said conduction member may be clamped in physical contact with said first surface portion of said conduction member by said second clamping means.

4,248,491

END CONNECTOR FOR FLEXIBLE PRINTED CIRCUITS

Bob Mouissie, Berlicum, Netherlands, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 27, 1979, Ser. No. 52,929
Claims priority, application Netherlands, Aug. 18, 1978, 7808579
Int. Cl.³ H05K *1/04*
U.S. Cl. 339—17 F **4 Claims**



1. In an end connector for a flexible printed circuit board having a hinged unitary moldable dielectric housing, said hinge separating a lid and bottom portion of said housing and an edge part of a flexible circuit between said lid and bottom in the closed position, the improvement comprising:

a. in the bottom of said housing, a pretensioned multi-segmented spring located in a longitudinal receiving space parallel to said hinge, partitions separating the segments of said spring in said receiving space and a row of locking cams outside said receiving space, each cam in line with a partition and;

b. in the lid of said housing, lid holes corresponding in location to said cams in the bottom of said housing, said lid holes receiving said cams when the housing is in the closed position, a thickened edge parallel to said hinge containing a row of pin receiving holes leading to pin guiding channels which correspond in location to the segments of said springs in the bottom of said housing.

4,248,492

ELECTRICAL CONNECTOR ASSEMBLY HAVING MEANS FOR SHIELDING AGAINST ELECTROMAGNETIC INTERFERENCE

Gene L. Snyder, Bainbridge, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Aug. 31, 1979, Ser. No. 71,461
Int. Cl.³ H01R *13/625*
U.S. Cl. 339—89 M **8 Claims**

1. In an electrical connector assembly comprising:

a first metal shell having a flange thereabout and mounting therein an insulative insert having a plurality of axial passages;

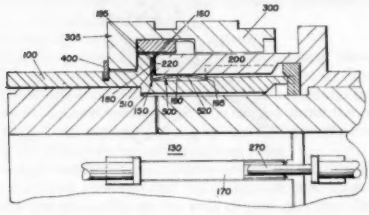
a second metal shell mounting therein an insulative insert having a plurality of axial passages, said second shell including a securable portion and a front section terminating as an end wall;

a plurality of pin type and socket type electrical contacts, each of said pin type electrical contacts being mounted in a respective axial passage of one of said inserts, each of said socket type electrical contacts being mounted in the

other of said inserts and arranged in the same manner as the pin type electrical contacts are arranged in the one insert whereby respective of the contacts are mateable;

a coupling nut for selectively connecting and maintaining said first and second shells together in the mated position, said coupling nut being mounted on said first shell and including means connectable with the securable portion on the second shell for connecting the first and second shells together with the pin type and socket type electrical contacts held in mated relationship;

the improvement comprising means assuring metal to metal contact between the flange of the first shell and the front



section of the second shell for shielding the electrical contacts from electromagnetic interference, said shielding means comprising a first channel formed in the wall of the flange of said first shell adjacent the end wall of the second shell and a cooperating channel about the front section of the first shell adjacent the front section of the second shell; and

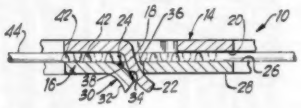
a resilient metallic member situated within said channels in contact with the first shell and with the end wall of the front section of the second shell, said metallic member has slots cut therein with adjacent slots extending from opposite sides of the metallic member to form a sinuous pattern.

4,248,493

SELF-LOCKING CLAMP MEMBER

Ted L. C. Kuo, Fanwood, N.J., assignor to Thomas & Betts Corporation, Raritan, N.J.

Filed May 25, 1979, Ser. No. 42,441
Int. Cl.³ H01R *4/10, 4/00*
U.S. Cl. 339—97 R **16 Claims**



1. A self-locking clamp member comprising:

a bendable member for bending along a bending line, said bendable member including a first arm portion and a second arm portion separated from one another by said bending line;

said first arm portion including a bendable tab extending away from the surface of said first arm portion; and

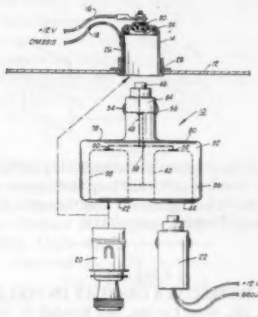
said second arm portion including an opening for receiving said bendable tab and closing means having a surface portion merging with a surface portion of said opening for engaging said bendable tab to bend said bendable tab when said tab enters said opening as said bendable member is bent along said bending line to move said first and second arm portions towards one another.

4,248,494

AUTOMOBILE DASHBOARD POWER ADAPTER

Edward S. McDonald, 1508 Twenty-Fifth St., Woodward, Okla. 73801, and G. M. Close, 400 Thorton Dr., Norman, Okla. 73069

Filed Jan. 31, 1979, Ser. No. 7,893
Int. Cl.³ H01R *33/90*
U.S. Cl. 339—154 A **2 Claims**



1. Power adapter apparatus for use in combination with a conventional cigarette lighter automobile dashboard adapter, comprising:

first connector means, including opposite electrical polarity conductors, for insertion and electrical communication within said dashboard receptacle;

first receptacle means connected in electrical communication with said first connector means;

second receptacle means connected in electrical communication with said first receptacle means; and

frame means rigidly supporting said first connector means, said first receptacle means and said second receptacle means in operative relationship when said power adapter apparatus is positioned in said automobile dashboard, said frame means consisting of first and second mating shells each formed as a unitary connector portion and receptacle portion, and including a locking relief formation circumferentially within said connector portion;

a unitary first polarity conductor formed as a T-bar conductor bar that is connectible to each of said first connector means and first and second receptacle means; and

a unitary second polarity conductor formed with a supporting ring to be received in said locking relief formation while extending oppositely disposed, parallel extending spring contactors to provide connection between said first connector means and first and second receptacle means.

4,248,495

PROJECTING OPTICAL SYSTEM WITH DEFLECTED OPTICAL AXIS MAINTAINED PARALLEL TO NEXT OPTICAL AXIS

Kazuo Minoura, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 7, 1979, Ser. No. 36,511
Claims priority, application Japan, May 8, 1978, 53-54260
Int. Cl.³ G02B *27/17;* G03B *27/68*
U.S. Cl. 350—6.3 **7 Claims**

1. A projecting optical system, comprising:

(a) a first plane;

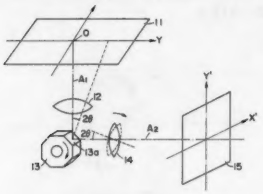
(b) a first image-forming optical system, one of the focal planes of which is disposed on said first plane;

(c) deflecting means to deflect parallel light beams from said first image-forming optical system in a predetermined direction;

(d) a second image-forming optical system having the same

distortional characteristic as that of said first image-forming optical system, and collecting the parallel light beams deflected by said deflector;

(e) a second plane disposed in substantial coincidence with one of the focal planes of said second image-forming optical system; and



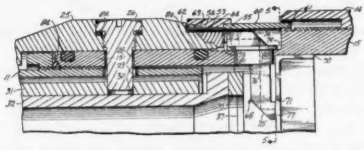
(f) first means to constantly maintain in parallel the optical axis of said first image forming optical system after deflection by said deflecting means and the optical axis of said second image forming optical axis.

4,248,496

RIFLESCOPE WITH DATA DISPLAY IN FIELD OF VIEW

Alfred A. Akin, Jr., West Covina, and Kendall B. Morris, Pasadena, both of Calif., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Nov. 22, 1978, Ser. No. 963,086
Int. Cl.³ G02B *27/32*
U.S. Cl. 350—10 **18 Claims**



13. A riflescope comprising:

a generally tubular mounting means;

an optical system supported on the mounting means and including spaced-apart ocular and objective lenses and an image-erecting system disposed in an enclosed space between the ocular and objective lenses; and

a unitary light-transmitting periscope supported on the mounting means and having a first end which is external to the enclosed space and oriented to view a selected object external to the enclosed space, the periscope further having a second end positioned within the enclosed space between the ocular lens and image-erecting system for forming an image of the object which can be viewed through the ocular lens.

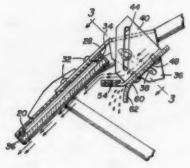
4,248,497

TRUCKER MIRROR SPRAY DEFLECTOR

Robert E. Leighton, 1634 S. Willis, Abilene, Tex. 79605

Filed Jun. 25, 1979, Ser. No. 52,130
Int. Cl.³ G02E *11/04*
U.S. Cl. 350—63 **10 Claims**

1. In combination with an upstanding rear view mirror of the type adapted for securement to an associated vehicle in outwardly spaced relation relative to one side of said vehicle, and thus including forward inner and rear outer upstanding marginal portions adjacent and remote, respectively, said vehicle said, upper and lower mounting brackets supported from said mirror, a vertically elongated wind deflector panel assembly supported from said brackets, said panel assembly including a main deflector panel spaced between said one vehicle side and the forward inner marginal portion of said mirror and also including forward inner and rear outer upstanding marginal portions and a secondary panel stationarily supported relative to said main panel, disposed on the outer side thereof and spaced between said main panel rear outer marginal portion and said mirror forward inner marginal portion, said main panel being rearwardly and outwardly inclined relative to said vehicle, said secondary panel being inclined relative to said mirror to define a forwardly opening acute angle therewith and relative to the main panel to define a forwardly opening



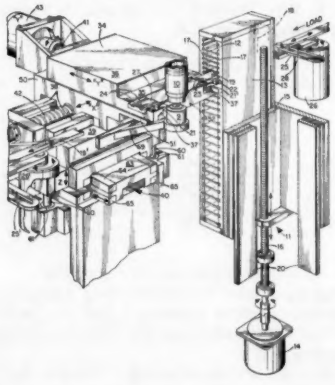
obtuse angle therewith, the spacing between the rear outer marginal portion of said main deflector panel and said secondary panel defining a water droplet discharge slot, whereby substantially all of the water droplets in the air flow incident upon the main deflector panel and subsequently deflected therefrom onto and across the secondary panel for discharging therefrom across the mirror will be removed from the deflected air and discharged through said slot.

4,248,498

AUTOMATIC MICROSCOPE SLIDE

Michael P. Georges, P.O. Box 800, Norwood, Mass. 02062

Continuation of Ser. No. 746,617, Dec. 1, 1976, abandoned. This application Jun. 29, 1978, Ser. No. 920,157
Int. Cl.³ G02B *21/36*
U.S. Cl. 350—90 **72 Claims**



1. A bio-medical microscope slide positioning system adapted for automatic sequential examination of a group of specimen slides comprising:

A. a transparent microscope specimen slide wherein a specimen to be examined is placed thereon and said specimen slide is operable for supporting, displaying and conveying said specimen;

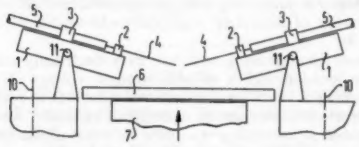
B. a storage magazine for storing a plurality of said microscope specimen slides to be examined;
C. means for said magazine operable for indexing said specimen slide to a specimen slide exit position;
D. specimen slide transfer means including means positioned relative to said storage magazine for removing and transporting from said magazine said specimen slide located in said magazine and positioned at said specimen slide exit position;
E. a microscope specimen slide stage positioned to obtain said specimen slide being transferred from said magazine;
F. means for positioning and retaining said specimen slide on said specimen slide stage;
G. specimen slide horizontal translation means operable for moving and positioning said stage retained specimen slide about in a horizontal plane;
H. a microscope optical viewing system;
I. means for positioning said microscope optical viewing system near said stage retained specimen slide so that by horizontal motion of said specimen slide horizontal translation means said specimen slide is moved about the optical axis of said optical viewing system for optically examining the specimen on said specimen slide;
J. a substage condenser lens system operable for focusing on and directing concentrated light through said stage retained specimen slide at the area of said specimen being examined and into said microscope optical viewing system;
K. an objective lens assembly of said microscope optical viewing system positioned to recieve the concentrated light directed through said stage retained specimen slide and into said microscope optical viewing system by said substage condenser lens system; and
L. focusing means comprising Z axis translation means operable for relative motion between said optical viewing system and said stage retained specimen slide along the optical axis of said optical viewing system to focus said optical viewing system on the specimen;
said specimen slide transfer means including mean positioned relative to said stage for removing said specimen slide from said stage after microscope examination.

4,248,499

SPLICING DEVICE FOR LIGHT WAVE GUIDES

Heinrich Liertz, Munich; Dieter Kunze, Neuried, and Richard Parstorfer, Germering, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 22, 1979, Ser. No. 14,220
Claims priority, application Fed. Rep. of Germany, Feb. 23, 1978, 2807799; Feb. 23, 1978, 2807806
Int. Cl.[3] G02B *5/14*
U.S. Cl. 350—96.21 **5 Claims**



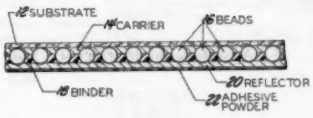
1. In a splicing device for connecting light waveguides together utilizing a splicing element having a centering groove for guiding the ends of the light waveguides therein, said splicing device having means for supporting a splicing element, a holding device disposed on each side of the means for supporting a splicing element, said holding device having means for holding an end of a light waveguide at an acute angle to the base of the splicing element, means for moving the holding device and the means for supporting a splicing element relative to each other to cause introduction of the ends of the light waveguides in the splicing element so that both ends of the individual light waveguides are moved towards one another in the centering groove of the splicing element and brought into mutual contact, and means for fixing the contacted ends, the improvement comprising each of the holding devices having clamp means for clamping a portion of a light waveguide which is free of the sheath and also for clamping the sheath of the light waveguide, each of said holding devices being mounted for rotation about a horizontal axis so that the light waveguide can be brought to lie in a horizontal plane, said horizontal axis being disposed below the horizontal plane assumed by the clamping elements of the holding device and the light waveguide, and said means for moving the holding devices and means for supporting moving the means for supporting from a position below said horizontal plane towards said horizontal plane.

4,248,500

REFLECTIVE GARMENT AND METHOD OF MANUFACTURING SAME

Vincent S. Pernicano, 2833 Railroad St., Boyne Falls, Mich. 49713, and Michael R. Wright, 24297 Ridgeview Dr., Farmington Hills, Mich. 48018

Filed Jul. 25, 1979, Ser. No. 60,466
Int. Cl.[3] G02B *5/12*
U.S. Cl. 350—98 **14 Claims**



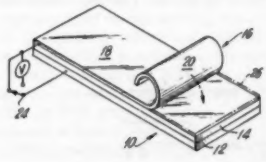
1. A reflective heat transfer combination comprising; an absorbent substrate, a particle carrier layer disposed in a predetermined pattern over said substrate, a layer of reflective particles partially disposed in said carrier layer, a coating disposed around said particles and engaging said carrier layer, said carrier layer being responsive to heat for melting and being absorbed by said substrate for exposing said particles upon removal of said substrate with said carrier layer absorbed into said substrate.

4,248,501

LIGHT CONTROL DEVICE

George R. Simpson, New York, N.Y., assignor to Bos-Knox, Ltd., Tulsa, Okla.

Filed Jun. 16, 1978, Ser. No. 916,094
Int. Cl.[3] G02F *1/01*
U.S. Cl. 350—266 **27 Claims**



1. An electrostatically actuated element for an electrically operated light control device, said element comprising;
a planar stationary electrode,
an electrode moveable between a position overlying the stationary electrode and a position removed from the stationary electrode, and
non-conductive means between the electrodes for keeping the electrodes electrically separated,
the moveable electrode being in the form of a sheet of flexi-

ble material having one end fixed with respect to the stationary electrode and the opposite end free with respect to the stationary electrode,

the sheet having a permanent mechanical stress which biases the sheet into a curl away from the stationary electrode to remove the moveable electrode from the stationary electrode in the absence of applied force,

the stationary electrode being separated in linear arrangement along the path of movement into a plurality of discrete conductive regions arranged as a series progressing from the vicinity of the fixed end of the moveable electrode,

the mechanical stress being insufficient to overcome the electrostatic force created when an electrical potential is applied between the moveable electrode and a conductive region adjacent the moveable electrode to cause the moveable electrode to overlie the conductive region.

4,248,502

ELECTRO-OPTICAL LIQUID CRYSTAL DISPLAY DEVICE

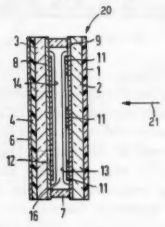
Martin Bechteler, Kirchheim, and Hans Krueger, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 12, 1979, Ser. No. 47,745

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1978, 2827258

Int. Cl.³ G02F *1/13*

U.S. Cl. 350—341 **12 Claims**



1. In an electro-optical display device having a pair of carrier plates spaced apart to form a cavity, each of said carrier plates on a surface facing the cavity being provided with an electrically conductive layer covered by a dielectric layer and said device having a medium switchable between two optically different states disposed in said cavity, the improvement comprising each of the conductive layers having a thickness d_1 and an index of refraction n_1 and each of the dielectric layers having a thickness d_2 and a refractive index of n_2, said thicknesses having a range of $0.5\ \bar{d}_1 \leqq d_1 \leqq 1.5\ \bar{d}_1$ and $0.5\ \bar{d}_2 \leqq d_2 \leqq 1.5\ \bar{d}_2$ wherein

$$\bar{d}_1 = \frac{\lambda}{2\pi n_1} \cdot \arctan \sqrt{\frac{A \cdot B}{C \cdot D}}\ ,\text{and}$$

$$\bar{d}_2 = \frac{\lambda}{2\pi n_2} \cdot \arctan \sqrt{\frac{A \cdot D}{C \cdot B}}$$

wherein λ=the mean free wavelength of the operating light,

$$A = 1 - \frac{n_0}{n_3}\ ,\ B = \frac{n_0}{n_1} - \frac{n_1}{n_3}\ ,$$

$$C = \frac{n_1}{n_2} - \frac{n_0 \cdot n_2}{n_1 \cdot n_3}\ ,\ D = \frac{n_2}{n_3} - \frac{n_0}{n_2}$$

wherein n_0=the index of refraction for the carrier plates and n_3 is the index of refraction of the medium in the idle state.

4,248,503

ELECTROCHROMIC DISPLAY DEVICE

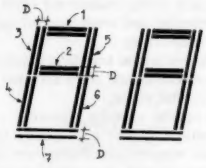
Freddy Huguenin, Lausanne, Switzerland, assignor to Ebauches S.A., Neuchatel, Switzerland

Filed Nov. 6, 1978, Ser. No. 958,004

Claims priority, application Switzerland, Nov. 17, 1977, 14051/77

Int. Cl.³ G02F *1/17*

U.S. Cl. 350—357 **3 Claims**



1. In an electrochromic display device having display elements wherein the improvement comprises each element being formed by two lines of electrochromic material separated by a zone which is devoid of said material, the area of the electrochromic material being the same for all the elements.

4,248,504

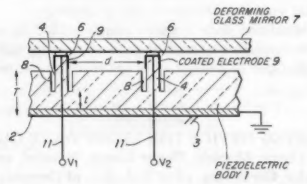
PIEZOELECTRIC WAVEFRONT MODULATOR

Nedo P. Albertinetti, Canton, and Ralph E. Aldrich, Acton, both of Mass., assignors to Itek Corporation, Lexington, Mass.

Filed Dec. 8, 1978, Ser. No. 967,651

Int. Cl.³ G02F *1/03*

U.S. Cl. 350—360 **4 Claims**



1. In a piezoelectric wavefront modulator, comprising:

a. a mirror (**7**);

b. a monolithic piezoelectric medium (**1**) which undergoes dimensional changes in response to an electric field impressed thereacross;

c. means for providing said piezoelectric medium with a plurality of discretely electrically-addressable locations (**4, 9**);

d. means for addressing each discretely electrically-addressable location with a variable strength voltage (**11**), the resulting field being sufficient at each location to cause the piezoelectric medium to undergo deformation which is capable of correcting distortion in a wavefront striking said mirror; the improvement characterized by:

e. a plurality of mirror actuators at said electrically-addressable locations affixed to said monolithic piezoelectric medium, each of which comprises:

a plurality of parts (**4**) coupled to said mirror and said monolithic piezoelectric medium, said posts extending from said monolithic piezoelectric medium a sufficient distance to produce complete separation of said mirror with respect to major portions of said monolithic medium, said posts being coupled to means (**8**) for substantially electromechanically isolating each post from the other posts, but not from the piezoelectric material adjacent said posts.

4,248,505
OPHTHALMOLOGICAL INSTRUMENT

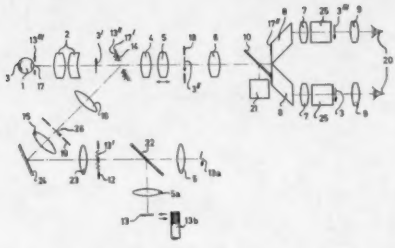
Franz Muchel, Königsbronn; Gunther Sümmerer, Oberkochen, and Ekkehard Stern, Königsbronn, all of Fed. Rep. of Germany, assignors to Carl Zeiss Stiftung, Fed. Rep. of Germany

Filed Oct. 3, 1978, Ser. No. 948,215

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1977, 2744707

Int. Cl.³ A61B *3/14*; G02B *21/22*

U.S. Cl. 351—7 **10 Claims**



1. Ophthalmological instrument for stereoscopic examination and documentation of the fundus of the eye, said instrument comprising means forming an observation beam path and an illumination beam path, said observation beam path having, successively in a direction from the eye (**1**) of a patient to be examined toward the eye (**20**) of an observer, a main objective (**2**) for producing a first inverted flattened image (**3'**) of the fundus (**3**), a second lens group (**4**) for focusing such image (**3'**) at infinity, a third lens group (**5**) for producing a real erect intermediate image (**3''**) at a locus behind said third lens group, a visual field stop (**18**) at said locus where said erect intermediate image is produced, a fourth lens group (**6**) for focusing said intermediate image (**3''**) at infinity, a shiftable beam deflection system (**10**) located beyond said fourth lens group and having at least two positions, one of which intercepts light coming from said fourth lens group and another of which permits passage of at least a portion of the light coming from said fourth lens group, and a stereoscopic observation tube, said stereoscopic observation tube including pupil splitting means (**8**) located beyond said deflection system to split a pupil beam, an observation light beam from said fourth lens group entering said stereoscopic observation tube when said beam deflection system is in one position and being deflected so as not to enter said tube when said beam deflection system is in another position, said illumination beam path including a perforated mirror having an opening through which said observation beam passes and also including means for projecting an image of a source of light via said perforated mirror into the pupil of the eye of the patient.

4,248,506
EYE FUNDUS OBSERVING OPTICAL SYSTEM

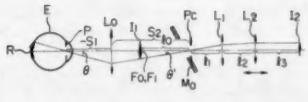
Fumio Takahashi, Yokohama, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Dec. 28, 1978, Ser. No. 973,877

Claims priority, application Japan, Dec. 28, 1977, 52/159447

Int. Cl.³ A61B *3/10*

U.S. Cl. 351—6 **3 Claims**



1. An optical system for observing therethrough the fundus of an eye to be examined and performing diopter correction by movement of a single lens group, comprising:

an objective lens for forming a first image of the fundus of the eye to be examined;

a diaphragm member disposed at a position conjugate with the pupil of the eye with respect to said objective lens;

a relay lens system for forming a second fundus image from the first fundus image formed by said objective lens, said relay lens system being disposed at the exit side of said diaphragm member and including a first positive lens group and a second positive lens group disposed at the exit side of said first positive lens group, said first positive lens group having the entrance side focal point thereof disposed in coincidence with the exit side focal point of said objective lens, said second positive lens group being disposed at such a reference position that the entrance side composite focal point of said relay lens system may coincide with the position of said diaphragm member, said second lens group being supported for movement in the direction of the optic axis about said reference position whereby diopter correction may be performed by movement of said second positive lens group alone.

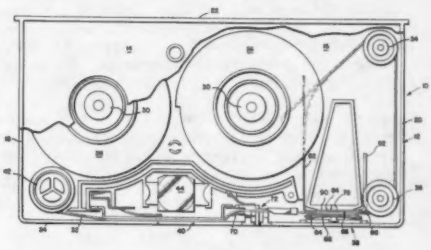
4,248,507
MULTIPURPOSE PHOTOGRAPHIC FILM HANDLING CASSETTE HAVING AN IMPROVED FILM PROCESSOR ARRANGEMENT

Frank M. Czumak, Derry, N.H., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 31, 1979, Ser. No. 108,413

Int. Cl.³ G03C *11/00*

U.S. Cl. 352—130 **3 Claims**



1. An applicator for depositing a coating of processing fluid on a moving run of a photographic film strip, the applicator comprising:

a fluid reservoir having an exterior wall carrying an opening therein through which processing fluid may pass, said exterior wall also defining a doctoring conformation adjacent said opening which is configured to deposit a coating of processing fluid on the moving run of film as it is advanced therepast in confronting relationship therewith;

a tear tab having a first length thereof located to be between said exterior wall and said moving run of film and having a sealing surface configured to engage a sealing portion of said exterior wall extending around the perimeter of said opening and at least a portion of said doctoring conformation, said tear tab being configured for facilitating a fluid-tight seal to said sealing portion of said exterior wall to initially seal processing fluid within said reservoir and, upon advancement of said tear tab relative to said reservoir, for effecting release of the fluid contained therein;

an adhesive material located between the sealing portion of said exterior wall and said sealing surface of said tear tab for effecting said fluid-tight seal; and

adhesive removing means attached to said tear tab so as to be drawn across and operatively engage, during advancement of said tear tab, at least the sealing portion of said exterior wall and the adhesive located thereon to thereby

remove at least a portion of said adhesive upon such advancement of said tear tab whereby a relatively clean area of said exterior wall is presented to said moving run of film.

4,248,508

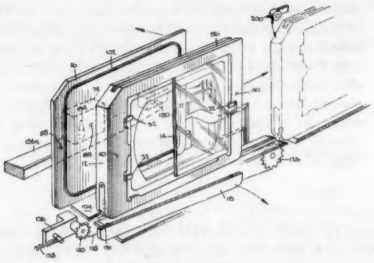
PROJECTION MASK STORAGE AND CARRIER SYSTEM

Theodore Watkin, Stamford, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Aug. 3, 1979, Ser. No. 63,494

Int. Cl.[3] G03B *23/14*

U.S. Cl. 353—114 **22 Claims**



1. A system for protecting a projection mask used in a projection machine which comprises:

a mask carrier in the form of a hollow frame and means for selectively securing a mask therein;

first and second covers engageable with opposite sides of said carrier frame, thereby forming a cassette enclosing said mask therein;

means in said projection machine for receiving said cassette;

means associated with said receiving means for engaging said first and second covers and removing them from, and replacing them into, engagement with said carrier frame; and

means for advancing said carrier and its contained mask to a projection location and returning them to said receiving means, whereby said cover engaging means may replace said covers on said carrier in preparation for removal from said machine.

4,248,509

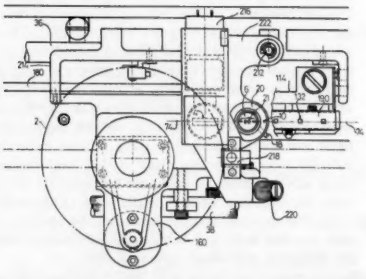
PHOTOCOMPOSING DEVICE AND METHOD

Louis M. Moyroud, Delray Beach, Fla. 33444

Continuation-in-part of Ser. No. 617,847, Sep. 29, 1975, Pat. No. 4,162,846, and Ser. No. 763,611, Jan. 28, 1977, Pat. No. 4,119,977. This application Mar. 28, 1979, Ser. No. 24,731

Int. Cl.[3] G03B *23/00, 17/06*

U.S. Cl. 354—10 **9 Claims**



1. A method of correcting for mis-alignment of the lens in a photocomposing machine, said method comprising establishing a desired base-line on a target, forming and projecting a small image through said lens onto said target, rotating said lens to a position at which said image falls on said line, fastening said lens in said position, measuring the lateral shift of said image due to said rotation, storing information representative of said shift, and utilizing said information to correct the motion of the character spacing mechanism when said lens is being used to project characters so as to accurately locate the character images on a recording surface.

4,248,510

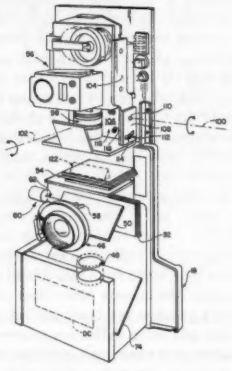
IDENTIFICATION CARD CAMERA SYSTEM

Philip G. Baker, Peabody, Mass.; Herbert A. Bing, Ossipee, N.H., and Myron A. Seiden, Needham, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Jun. 26, 1979, Ser. No. 52,439

Int. Cl.[3] G03B *17/24*

U.S. Cl. 354—109 **10 Claims**



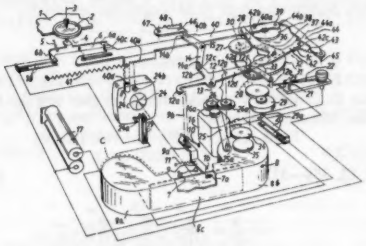
1. In an identification camera system of the type that provides a composite subject/data identification card and a photo record of the identification card and which has a housing that contains a subject optical system for directing light from a subject to a subject area of an identification card image plane and to a subject area of a photo record image plane and a data optical system for directing light from a data carrier to a data area of an identification card image plane and to a data area of a photo record image plane, the respective subject and data areas of the identification card image plane and the photo record image plane being mutually exclusive, the photo record image plane located at a film plane within a recording camera, the improvement comprising:

an optical compensation means for compensating the respective focal lengths and angles of the subject and data image paths to direct their images to the photo record image plane, said compensating means having a first lens arrangement for focusing the data image on the photo record image plane, and a second lens for compensating the subject image directed to the photo record image plane.

4,248,511
MOTORIZED STILL CAMERA

Otto Stemme, Munich; Peter Lermann, Narring; Rolf Schroeder, Baldham, and Horst Karl, Munich, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 939,374, Sep. 15, 1978, Pat. No. 4,202,616. This application Feb. 1, 1979, Ser. No. 8,383
Claims priority, application Fed. Rep. of Germany, Sep. 5, 1977, 2739930
Int. Cl.[3] G03B *1/12, 7/08*
U.S. Cl. 354—173 6 Claims

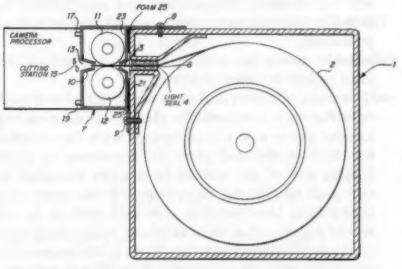


1. In a motor-driven still camera, a combination, comprising a camera housing having a front side and a rear side and, adjacent said rear side, a compartment for a film supply section and a film take-up section, said film take-up section having a spool-rotating gear; a motor drive, including a film transporting mechanism in said housing and a drive pinion; and electric motor means operatively connected with said film transporting mechanism for driving the same, said electric motor means being located in said housing forwardly of said film take-up section in direction towards said front side, said film transporting mechanism including a gear train for transmitting motion from said drive pinion to said spool-rotating gear, the gears of said gear train all being configurated as disk-shaped gears so as to reduce the height and therefore the overall vertical space requirement of said gear train in said housing.

4,248,512
TWO-PART PHOTOSENSITIVE MEDIA REPLACEABLE CASSETTE SUPPLY DEVICE

Daniel H. Robbins, Rochester, N.Y., assignor to Itek Corporation, Lexington, Mass.

Continuation of Ser. No. 611,595, Sep. 8, 1975. This application Sep. 15, 1978, Ser. No. 942,521
Int. Cl.[2] G03B *17/26*
U.S. Cl. 354—275 3 Claims

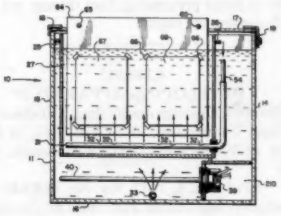


1. In combination:
a. a camera;
b. an additional two-part photosensitive material replaceable supply device for said camera including:
b-1. a disposable cassette containing said photosensitive material;
b-2. a cassette exit orifice for permitting said photosensitive material to be transported out of said disposable cassette;
b-3. first light seal means associated with said disposable cassette for preventing light from fogging said material therein;
b-4. a reusable light sealed buffer box;
b-5. means for detachably fastening said light sealed buffer box to said disposable cassette to permit reuse of said buffer box and at a position thereon so that photosensitive material driven through said cassette exit orifice may be further driven through said buffer box into an exposure station of said camera;
b-6. drive means associated with said light sealed buffer box for driving said photosensitive material emanating from said disposable cassette through said buffer box and into said camera in a first direction and for driving said photosensitive material in a second direction opposite said first direction until the leading edge thereof is close to but not beyond the bite of said drive means; and
c. means for detachably coupling said two-part replaceable supply device to said camera.

4,248,513
APPARATUS FOR DEVELOPING FILM

Michael V. Caccamisi, Rte. 2 - Box 698, Garland, Tex. 75040

Filed Aug. 13, 1979, Ser. No. 66,170
Int. Cl.[3] G03D *3/04*
U.S. Cl. 354—299 12 Claims



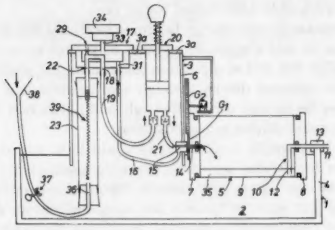
1. Apparatus for developing photographic film and the like comprising:
a housing having an openable top;
a constant temperature bath tank adapted to contain a non-flowing bath of liquid within the housing;
at least one upwardly open developing tank removably mounted in said constant temperature bath tank, said developing tank having a perforated air agitation line therein;
a slot in the top of said housing aligned with said developing tank giving access thereto for insertion and removal of film to be developed;
an equipment compartment within said housing;
an air pump in said equipment compartment; and
flexible air delivery means in said equipment compartment for delivering air from said air pump to said air agitation line and through the perforations thereof into said developing tank to agitate liquid therein, said flexible air delivery means being of a length sufficient to permit ready removal of said developing tank from said constant temperature bath tank without the necessity of disconnecting said means from said developing tank air agitation line below the liquid level in said constant temperature bath tank.

4,248,514

PHOTOGRAPHIC PROCESSING APPARATUS

James L. Watkins, Appleby, Rosebery Rd., Tokers Green, Reading, Berkshire, England

Filed Oct. 10, 1979, Ser. No. 83,474
Int. Cl.[3] G03D 3/06
U.S. Cl. 354—299 **29 Claims**



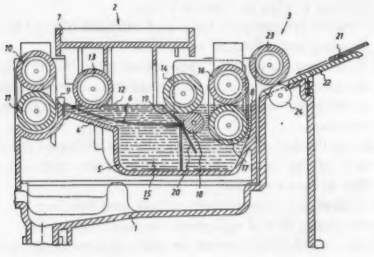
1. Photographic processing apparatus comprising a substantially air-tight chamber mounted for angular movement about an axis, at least one reservoir for a photographic processing fluid, pump means for introducing processing fluid into and discharging it from the interior of said chamber, and valve means for controlling the introduction of processing fluid into and discharge of processing fluid from the interior of said chamber, the outlet of the pump means being connected to the interior of the chamber and the valve means being operable to connect the inlet of the pump means either to said at least one reservoir so that processing fluid may be withdrawn from said at least one reservoir and introduced into the chamber or to atmosphere so that air under pressure can be introduced into the chamber to force processing fluid therein out of the chamber through a chamber outlet.

4,248,515

DEVELOPING APPARATUS

Avelino Fernandez, Gauting; Josef Glass, Ottobrunn, and Viktor Osegowitsch, Taufkirchen, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Jun. 8, 1977, Ser. No. 804,848
Claims priority, application Fed. Rep. of Germany, Jun. 12, 1976, 2626447
Int. Cl.[3] G03D 3/13
U.S. Cl. 354—321 **1 Claim**



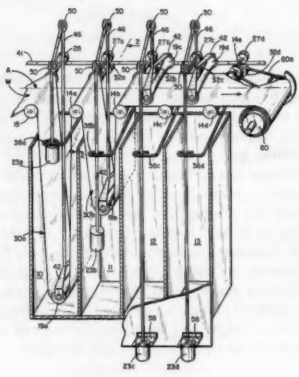
1. In a developing apparatus of the type comprised of a plurality of successive processing chambers arranged for generally horizontal travel of a photographic emulsion-carrying material to be processed through the successive processing chambers, a developing chamber of novel construction comprising a developing-fluid tank containing a body of developing fluid, the body of developing fluid having an upper surface; and transport means for transporting photographic material to be developed into, through and out of the developing chamber along a predetermined path, including at least one rotatably mounted submerging roller operative for causing transported photographic material to pass below the upper surface of the body of developing fluid and a rotatably mounted counterpressure roller arranged beneath the submerging roller to press the transported photographic material against the submerging roller during transport of the photographic material through the developing chamber, the developing chamber furthermore including at least one inclined flow plate extending transverse to the transport direction of photographic material and operative for damping the agitation of the body of developing fluid produced by rotation of the submerging and counterpressure rollers during transport of photographic material.

4,248,516

SELF-THREADING PHOTOGRAPHIC PROCESSOR

James D. Grooters, Wayzata, Minn., assignor to Pako Corporation, Minneapolis, Minn.

Filed Jan. 17, 1980, Ser. No. 113,091
Int. Cl.[3] G03D 3/13
U.S. Cl. 354—321 **5 Claims**



1. A machine for processing an elongated web of photographic material, having an automatic self-threading roller transport system, said machine comprising:

a plurality of processing compartments suitable for confining processing liquid therein, including at least a first and second compartment,

a set of web-engaging driving rollers respectively mounted above said compartments to respectively feed the web into the compartments,

a set of weighted idler rollers mounted for movement into and out of each compartment and respectively lowered into the compartments when a web of material is being processed,

releasable means for initially holdng said set of weighted idler rollers in raised position,

said two sets of rollers defining two principal web paths, one constituting a substantially planar initial threading path located above said compartments with the weighted rollers held in elevated position thereabove to permit the leading end of the web to be initially threaded through said path above said compartments, the other web path constituting the operative web path defined by said two sets of rollers when said weighted rollers have been lowered into their operative positions in the respective compartments after the automatic threading operation,

means connected to said weighted idler rollers for counterbalancing only a portion of the weight thereof,

controllable means for driving the web engaging driving rollers,

control means controlling the actuation of said driving

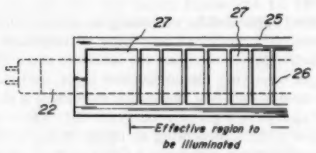
means for the second compartment actuated by the first weighted roller being lowered into operative position within the first compartment to actuate the second drive roller to feed the web into said second compartment and, control means for successively actuating the drive rollers for each of the other compartments responsive to the lowering of the next proceeding weighted roller into its operative position and thus ultimately produce a second web path through the compartments which constitutes said operative web path.

4,248,517

ILLUMINATING DEVICE FOR USE IN A COPYING APPARATUS, A FACSIMILE APPARATUS, AND THE LIKE

Masaji Nishikawa, Hachiaji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 22, 1978, Ser. No. 974,653
Claims priority, application Japan, Dec. 28, 1977, 52-157438
Int. Cl.[3] G03B *27/00*
U.S. Cl. 355—1 **6 Claims**



1. An illuminating device for use in a copying apparatus, a facsimile apparatus and the like in which a document to be scanned is illuminated and imagewise exposure of the illuminated document is effected to an electrophotographic photosensitive member by means of an array of converging type optical fibers comprising:

a fluorescent lamp having an elongated tube and a slit like aperture through which light emitted from the lamp is directed to the document;

a dimmer circuit connected to the fluorescent lamp for adjusting an amount of light emitted from the lamp; and

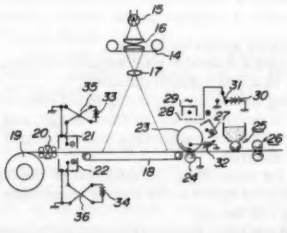
a mask arranged around the fluorescent lamp at least adjacent thereto and having light permeable openings whose aperture ratio is small at a central portion of the lamp tube and is larger at both end portions of the lamp tube.

4,248,518

ELECTROPHOTOGRAPHIC COPYING APPARATUS

Masaji Nishikawa, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 24, 1978, Ser. No. 899,416
Claims priority, application Japan, Apr. 27, 1977, 52-47817
Int. Cl.[3] G03G *15/00*
U.S. Cl. 355—3 CH **2 Claims**



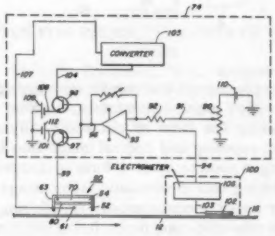
1. In an improved electrographic apparatus comprising a charge holding means, means for producing, on said charge holding means, an electrostatic latent image having a negative polarity, a chargeable drum composed of an electrically conductive member and a dielectric layer coated thereon, means for uniformly charging said chargeable drum, and means for bringing the thus uniformly charged chargeable drum into contact with said charge holding means which has said electrostatic latent image produced thereon and for moving said charge holding means, wherein the improvement comprises: said means for uniformly charging said chargeable drum comprises a direct current corona discharge device for charging said chargeable drum with a positive polarity, an alternating current corona discharge device including a grip disposed between said alternating current corona discharge device and said chargeable drum being supplied with a bias voltage having a positive polarity and in which said charge holding means is brought into contact with the chargeable drum of a previously uniformly charged opposite polarity, to thereby eliminate the electrostatic latent image having a negative polarity and to cause the charge having the positive polarity to remain at that region of said charge holding means on which said electrostatic latent image having a negative polarity has been deleted by exposed light.

4,248,519

CHARGE CONTROL SYSTEM FOR XEROGRAPHIC MACHINES

Charles J. Urso, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 27, 1976, Ser. No. 736,035
Int. Cl.[3] G03G *15/02*
U.S. Cl. 355—3 CH **1 Claim**



1. In an electrostatic type reproduction machine for producing copies of an original, the machine having a photoreceptor, charging means for placing a charge on the photoreceptor in preparation for imaging, exposure means for exposing the charged photoreceptor to the original whereby to create a latent electrostatic image of the original on the photoreceptor, developing means for developing the latent electrostatic image on the photoreceptor, and transfer means for transferring the developed image to a sheet of copy material, the combination comprising:

light means for illuminating said photoreceptor to reduce the charge level of said photoreceptor;

supplemental charging means for increasing the charge on said photoreceptor;

a power source for said light means and said supplemental charging means;

means for monitoring the charge on said photoreceptor to produce a control signal proportional to the degree of overcharge or undercharge of said photoreceptor;

said monitoring means including means for generating a first signal reflecting the optimum charge for said photoreceptor, means for generating a second signal reflecting the existing charge on said photoreceptor, and comparator means for comparing said first and second signals to provide said control signal; and

control means for proportionally actuating said light means and said supplemental charging means in response to said control signal, said control means including

first control gate means responsive to a control signal of one polarity for regulating power input from said power source to said light means in proportion to the strength of said control signal; and

second control gate means responsive to a control signal of the opposite polarity for regulating power input from said power source to said supplemental charging means in proportion to the strength of said control signal.

4,248,520

ELECTROPHOTOGRAPHIC COPYING APPARATUS WITH IMPROVED FIXING ARRANGEMENT

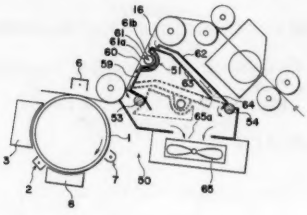
Takaji Kurita, Kawachinagano, and Yuji Enoguchi, Higashi-osaka, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Oct. 2, 1978, Ser. No. 947,510

Claims priority, application Japan, Oct. 12, 1977, 52/137176[U]

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 FU **6 Claims**



1. An electrophotographic copier for transferring an original image onto a copy paper continuously fed from a roll by a process including the steps of electrostatically charging a photoreceptor, exposing said original image onto said electrostatically charged photoreceptor to form an electrostatic latent image, developing said electrostatic latent image to form a toner powder image, electrostatically transferring said toner powder image onto said copy paper, fusing said toner powder image on said copy paper to fix it thereon, and cutting said copy paper carrying the fixed image thereon into successive lengths to provide respective copies, said electrophotographic copier comprising: means for transferring said toner powder image formed on said photoreceptor onto said copy paper; means for fixing said toner powder image on said copy paper by fusing, said fixing means at least including one heat source disposed in a position near the path of travel of said copy paper; means for holding said heat source for selective movement of said heat source towards and away from said copy paper; means for retracting said heat source from said copy paper at least when said copy paper is not transported forwardly, a reflector for reflecting heat radiated from said heat source towards said copy paper, at least one movable duct means through which air can flow, means for drawing air to induce air flow through said duct means, said movable duct means being movable from an operational position thereof to a standby position thereof in which it covers at least the upper portion of said heat source when said heat source is moved to a position in which it is retracted from said copy paper; at least one pair of transferring rolls for forward transporting of said copy paper carrying said fixed image thereon; and means for cutting said copy paper carrying said fixed image thereon into sheet-size lengths, said cutting means being disposed at a forward position with respect to the position of said pair of rolls in said path of travel of said copy paper.

4,248,521

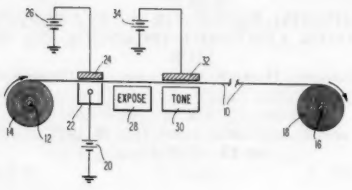
ELECTROGRAPHIC RECORDING APPARATUS AND METHOD

Lee R. Brown; Jose L. Herrera, both of Houston, Tex., and John D. Plumadore, Westfield, Mass., assignors to James River Graphics Inc., South Hadley, Mass. and SIE Incorporated, Houston, Tex.

Division of Ser. No. 844,304, Oct. 21, 1977, Pat. No. 4,195,991. This application Sep. 24, 1979, Ser. No. 77,895

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 R **6 Claims**



1. An improved apparatus for recording on an electrophotographic medium, said medium comprising an insulative substrate, a conductive layer overlying the substrate and a photoconductive layer overlying the conductive layer, said recording apparatus comprising first means for providing a desired distribution of charge of a given polarity on the surface of the photoconductive layer representing an image to be recorded, wherein the improvement comprises a first electrode adjacent the surface of the insulating layer opposite the first charging means, and a power supply connected to the first electrode for applying a potential to the first electrode, said potential establishing a field having a polarity and sufficient strength at the photoconductive layer to reduce the tendency of the charge to be distributed in an undesired pattern on the surface of the photoconductive layer as a result of defects in the medium.

4,248,522

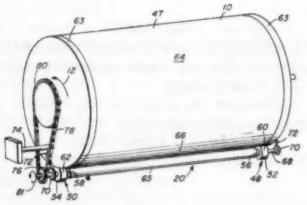
SOLID METERING ROLL

Austin E. Davis, Nashua, N.H., assignor to Nashua Corporation, Nashua, N.H.

Filed May 21, 1979, Ser. No. 40,901

Int. Cl.³ G03G *15/10*

U.S. Cl. 355—10 **11 Claims**



1. In a copying apparatus having

a drum having a reuseable photosensitive surface, said drum rotating in a first rotation direction,

a developing station for contacting liquid toner to said drum surface to develop an electrostatic image, and

a transfer station for transferring said developed image to a transfer material,

apparatus for controlling the thickness of the liquid on the drum prior to said transfer station comprising

a metering roll having

a metering portion having a first end and a second end and distance control portions rigidly secured in coaxial relationship to each of said ends so that said metering por-

tion and said distance control portions have a fixed rotational relationship whereby they do not rotate relative to each other,

said distance control portions being sized to maintain said metering portion in a spaced apart relationship with said drum,

means for biasing said metering roll toward the drum, and

means for rotating said metering roll in said first rotation direction,

whereby said distance control portions contact said rotating drum in a sliding, opposing frictional relationship.

4,248,523

ELECTROPHOTOGRAPHIC COPYING APPARATUS EQUIPPED WITH IMPROVED COPY PAPER CUTTING ARRANGEMENT

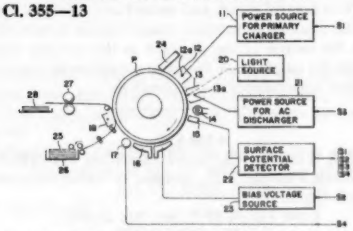
Yasuhiko Doi; Shigemitsu Shimizu; Toshio Matsui; Yoshihisa Kawai; Yutaka Irie; Norihiko Suzuki, and Soichi Iwao, all of Toyokawa, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jul. 3, 1979, Ser. No. 54,567

Claims priority, application Japan, Jul. 12, 1978, 53-85483

Int. Cl.³ G03G *15/00*; G03B *29/00*

U.S. Cl. 355—13 **9 Claims**



1. An electrophotographic copying apparatus which comprises a rotatable photosensitive drum having a photosensitive surface on the outer periphery thereof, a scanning device for projecting an image of an original to be copied onto said photosensitive surface at an exposure position in synchronization with the rotation of said photosensitive drum so as to form the image of the original on said photosensitive surface, a transfer device for transferring the image formed on said photosensitive surface onto copy paper at a transfer position, cutter means for cutting the copy paper from a roll of copy paper into a predetermined size at a copy paper cutting position, the distance between said exposure position and transfer position along said photosensitive surface being greater than the distance along the transporting path of the copy paper between said copy paper cutting position and said transfer position, and means operatively associated with said scanning device for actuating said cutter means only after termination of the exposure.

4,248,524

METHOD OF AND APPARATUS FOR STABILIZING ELECTROPHOTOGRAPHIC IMAGES

Toru Takahashi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 6, 1978, Ser. No. 922,272

Claims priority, application Japan, Jul. 11, 1977, 52-82737; Jul. 20, 1977, 52-86954; Jul. 29, 1977, 52-91128

Int. Cl.³ G03G *15/00*

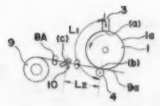
U.S. Cl. 355—14 E **20 Claims**

1. A method of stabilizing a contrast value of electrophotographic images comprising the steps of:

forming an electrostatic latent image on an image bearing member by an electrostatic image formation process including charging and image exposure steps applied to the surface of the member;

detecting the light region and the dark region surface potentials of the electrostatic latent image formed on the member;

determining the difference between said light region surface potential and dark region surface potential to obtain an electrostatic contrast value and modifying the charging condition in accordance with the value of said contrast to



adjust said electrostatic contrast to a predetermined value; and

modifying the background portion potential to a predetermined potential, which would not create fog when said electrostatic image is developed into a visible image, without substantially varying the modified electrostatic contrast.

4,248,525

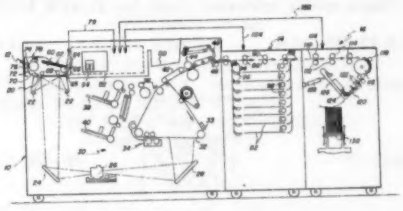
APPARATUS FOR PRODUCING SETS OF COLLATED COPIES

Robert M. Sterrett, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 3, 1979, Ser. No. 35,573

Int. Cl.³ G03G *15/00*; B65H *39/042, 39/11*

U.S. Cl. 355—14 SH **3 Claims**



1. Apparatus for producing sets of collated copies from a set of document sheets having a particular page sequence order, the apparatus comprising:

means for producing copies of one or more of the document sheets in a non-collating mode of operation;

means for storing temporarily copies produced in the non-collating mode of operation;

means for producing copies of document sheets in a collating mode of operation;

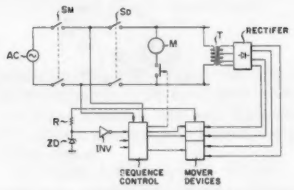
means for receiving copies made by both of said producing means; and

means for delivering copies to said receiving means directly from said means for producing copies in a collating mode of operation and from said storing means intermixed in an order that results in the copies in said receiving means having a page sequence order corresponding to the particular page sequence order of the set of document sheets.

4,248,526
CIRCUIT FOR DETECTING DOOR STATE IN COPYING APPARATUS

Abe Shunichi, and Mistuo Akiyama, both of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jan. 5, 1979, Ser. No. 1,056
Claims priority, application Japan, Jan. 13, 1978, 53-2645[U]
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 R **6 Claims**

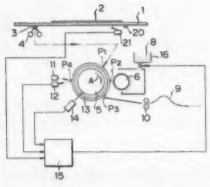


1. In a copier having a source of power, an access door moveable between open and closed positions, a plurality of electrically powered devices for effecting operation of the copier, door-operated switch means connecting the devices to the source of power when the access door is closed and disconnecting them when the door is open, a sequence control circuit having an input connected to the source of power and its output connected to the devices for operating the same in desired sequential order, the improvement comprising means for supplying to the sequence control circuit a signal indicative of the closed or open position of the access door respectively in response to the application or lack of power to the devices.

4,248,527
APPARATUS FOR CONTROLLING TONER CONCENTRATION IN ELECTROPHOTOGRAPHIC COPYING MACHINES

Mistuo Akiyama, and Hiroshi Kuru, both of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jan. 5, 1979, Ser. No. 1,059
Claims priority, application Japan, Jan. 17, 1978, 53/2760
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 R **1 Claim**



1. In an improved apparatus for controlling the toner concentration in an electrophotographic copying machine having an original carrier plate for supporting an original to be copied at a predetermined location thereon, an electrophotosensitive medium adapted for movement during operation of the copying machine, an optical system positioned between the original carrier plate and the electrophotosensitive medium, means for relatively moving the original carrier plate and the optical system with respect to each other along a path to scan the original and to optically transmit an image of the same onto the medium during movement along said path so as to form an electrostatic image of the original on the medium, a developing device for changing the electrostatic image to a visible toner image and including means for controlling the toner concentration of a developed toner image, and means for measuring the extent of operative movement of the electrophotosensitive medium; said apparatus including a patch of a predetermined uniform density carried on the original carrier plate at a location remote from the predetermined location for supporting the original to be copied, said patch location being such that during said relative movement of the carrier plate and optical system the image of the patch is scanned and transmitted by the optical system onto the electrophotosensitive medium to form thereon an electrostatic image of the patch, and a detector for measuring the density of the developed toner image of the patch and for generating an output signal variable in accordance with image density for enabling control of the toner concentration of the toner image of the original; the improvement comprising;

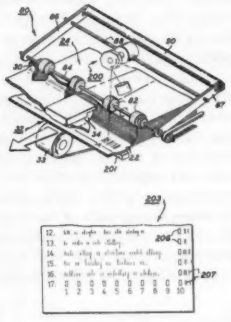
switch means on the copying machine actuatable at a predetermined position of the original carrier plate along said path of relative movement with respect to the optical system adapted when actuated to produce a first control signal, and

control means responsive to the movement measuring means and the patch image density detector and said switch means for producing a second control signal at a time corresponding to a predetermined extent of movement of the electrophotosensitive medium following receipt of said first control signal, said second control signal operating the toner concentration control means in accordance with the output of the detector as the moving medium carries the patch toner image to a measurement-enabling position with respect to the detector.

4,248,528
COPIER WITH DOCUMENT SENSING CONTROL

Ravi B. Sahay, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 4, 1979, Ser. No. 27,131
Int. Cl.³ G03G *14/00*
U.S. Cl. 355—14 R **8 Claims**



1. In a copier with a document feeder for feeding conventionally sized original document sheets with conventional information indicia on one or both sides thereof to a document imaging station to be copied onto selected copy sheets in said copier, which copier is controlled by an electronic controller, the improvement wherein:

said document feeder has a non-imaging optical scanning means therein for optically scanning the document sheets being fed by said document feeder before they are copied to provide electrical pulses corresponding to light and dark indicia area of said document sheets; and

wherein a control sheet of said conventional document size is adapted to be insertable into said same document feeder in the same manner as said original document sheets;

said control sheet has a plurality of defined operator selectably markable indicia area thereon, identified by adjacent pre-printed locating and identifying indicia thereof, said

selectable markable areas corresponding to different operator selectable operations of said copier;

said operator markable indicia areas on said control sheet are adapted for reading by said optical scanning means; and

said optical scanning means is connected to said electronic controller of said copier to control the operation of said copier with said operator markable indicia as said control sheet is fed by said document feeder, including means to automatically inhibit the copying of said control sheet by said copier by indicia areas thereon;

wherein said same optical scanning means and said electronic controller are further adapted to sense the absence of any indicia on one side of an individual document sheet being fed by said document feeder and to automatically inhibit the copying of that indicia-free side of that document sheet by said copier.

4,248,529

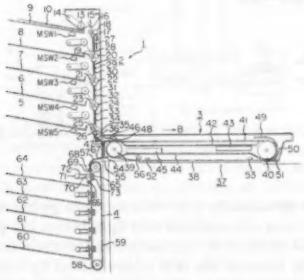
AUTOMATIC IMAGE ORIGINAL HANDLING DEVICE

Tadashi Sato, Kokubunji, and Katsushi Furuichi, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 899,420, Apr. 24, 1978, abandoned. This application Apr. 13, 1979, Ser. No. 29,844

Int. Cl.³ G03B *27/52*

U.S. Cl. 355—41 **26 Claims**



1. An automatic image original handling device comprising in combination:

(a) a plurality of image original holding members capable of accommodating therein a plurality of image originals;

(b) image original forwarding means for forwarding the image originals from the respective original holding members, one at a time;

(c) image original conveying means for conveying the image originals, forwarded by the image original forwarding means, to an image exposure section;

(d) a plurality of image original receiving members for receiving and storing the image originals forwarded and conveyed from the corresponding image original holding members; and

(e) control means for controlling the image originals to be automatically and sequentially forwarded from the plurality of image original holding members so that after the last image original on an original holding member has been conveyed, the image original on the next subsequent original mounting member begins to be forwarded.

4,248,530

FRAME FOR MAKING PHOTOCOPIES

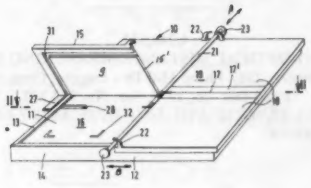
Jürgen Bockemühl-Simon, and Rainer Bernhardt, both of Bergneustadt, Fed. Rep. of Germany, assignors to Johannes Bockemuehl, Gummersbach, Fed. Rep. of Germany

Filed Jun. 28, 1979, Ser. No. 52,978

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1978, 2829020

Int. Cl.³ G03B *27/58*

U.S. Cl. 355—74 **13 Claims**



1. A frame for making photocopies, comprising a support having an upper surface adapted to support photosensitive sheet material and having four edges; at least two adjacent cover units, each unit being formed with at least two adjacent covers for covering respective sections of said upper surface to prevent light penetration onto the latter, said covers being sealingly connected to each other by a hinge means to permit the pivotal movement of said covers independently of each other between open and closed positions within each of said cover units; means for sealingly engaging said edges of said support when said covers are in the closed position; said adjacent cover units having adjacent edges provided with shoulders shaped and dimensioned to complement each other and to form together an open groove when said covers are in the closed position; and means for pressing each two adjacent ones of said cover units in a direction towards said upper surface of said support, said pressing means including an elongated rod mountable in said groove and pressing said two adjacent cover units to thereby prevent light penetration onto said upper surface when the covers are in the closed position.

4,248,531

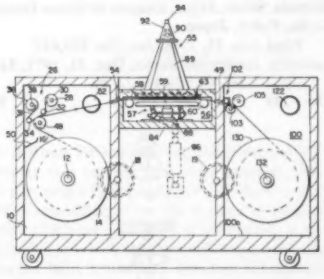
VIDEODISC REPLICATION APPARATUS

David S. Smith, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 27, 1979, Ser. No. 52,532

Int. Cl.³ G03B *27/20*

U.S. Cl. 355—91 **15 Claims**



1. Apparatus for use in the photographic replication of information from a master record carrier onto a replicate material in web form, said apparatus comprising:

(a) means defining an exposure chamber;

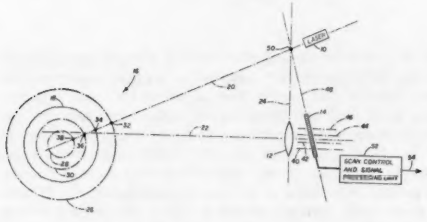
(b) means for bringing a replicate material and a master record carrier into contact within said exposure chamber for a contact print exposure;
(c) means for evacuating said exposure chamber to facilitate contact between the replicate material and the master record carrier;
(d) means defining a ported takeup chamber adapted to receive the replicate material from said exposure chamber after a contact print exposure; and
(e) means for selectively closing fluid communication between said exposure chamber and said takeup chamber when access to the takeup chamber is desired.

4,248,532

ELECTRO-OPTICAL DISTANCE-MEASURING SYSTEM

John C. Nosler, 2587 Floral Hill Dr., Eugene, Oreg. 97403

Filed Dec. 26, 1978, Ser. No. 973,227
Int. Cl.[3] G01C *3/00, 5/00, 11/26;* **A47J** *7/08*
U.S. Cl. 356—1 **4 Claims**



1. Electro-optical distance-measuring apparatus having a defined dynamic viewing range comprising
means for projecting a beam of optical radiation along a defined projection axis,
means aimed along a defined viewing axis for gathering and transmitting radiation from said beam reflected by an object impinged thereby, said gathering means generally occupying a plane which is normal to said viewing axis and which intersects said projection axis at a known point, and
elongated, linearly distributed optical-radiation sensing means having a length relating to said viewing range, positioned to be impinged by reflected radiation transmitted by said gathering means, said sensing means including plural side-by-side adjacent sensors arranged along a substantially straight line which passes through said known point.

4,248,533

DISTORTED TEXTURE DETECTING METHOD

Ryoichi Shimada, Sabae, Japan, assignor to Seiren Denshi Kabushiki Kaisha, Fukui, Japan

Filed Aug. 21, 1978, Ser. No. 935,637
Claims priority, application Japan, Dec. 21, 1977, 52-152864
Int. Cl.[3] G01N *21/89*
U.S. Cl. 356—238 **9 Claims**

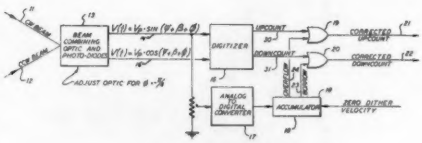
1. A method for detecting distorted texture in weft threads of a woven material moving traversely between a light source and an alignment slit, comprising the steps of:
providing a divided slit arrangement including a plurality of unit slits;
providing each unit slit with a respective preset angle of inclination which differs by a predetermined angle from the preset angle of inclination of adjacent said unit slits;
generating a moire by moving said weft threads of said woven material adjacent to said divided slit arrangement and illuminating said woven material and said divided slit arrangement;
detecting and transducing said moire through said alignment slit to develop a plurality of voltages, each voltage being proportional to light incident on a respective one of said unit slits;
scanning said plurality of voltages to determine said voltage having the greatest magnitude; and
selecting said respective one of said unit slits corresponding to said voltage having the greatest magnitude so as to determine the preset angle of inclination of said selected respective one of said unit slits, whereby to detect the direction of the weft threads in said woven material.

4,248,534

APPARATUS AND METHOD FOR THE ELIMINATION OF ANGULAR VIBRATION INDUCED ERRORS IN RING LASER GYROSCOPES

Hubert F. Elbert, Tucson, Ariz., assignor to The Singer Company, Little Falls, N.J.

Filed May 9, 1979, Ser. No. 37,261
Int. Cl.[3] G01C *19/64*
U.S. Cl. 356—350 **4 Claims**



1. In a sinusoidally dithered ring laser gyroscope wherein clockwise and counterclockwise light beams are generated in the optical cavity of the gyroscope and wherein the frequency differential between the two beams caused by rotation of the gyroscope results in an interference pattern when the beams are extracted from the gyroscope and heterodyned by a beam combining means and wherein the beat frequency of the interference pattern is measured by a photodetector and wherein the beat frequency is a measure of the angular rotation of the gyroscope and wherein means including the photodetector convert the measure of beat frequency to a gyroscope output signal indicating the angular rotation of the gyroscope, an apparatus comprising:
(a) said photodetector including at least one analog gyroscope output signal in the form

$$V(t) = Vp \sin (\Psi + \beta + \phi)$$

where Vp is a scale factor related to the excitation voltage of the photodetector means, Ψ is the momentary phase difference between the clockwise and counterclockwise beams, β is the composite scattering angle and ϕ is the fringe pattern adjustment for any phase which can be adjusted by positioning of the photodetector means;
(b) the excitation voltage of the photodetector being scaled such that

$$Vp = \Omega_L \sqrt{\frac{2\pi}{\Omega_D \cdot \omega_d}}$$

where Ω_L is the rate at which lock-in effect occurs in the gyroscope Ω_D is the dither rate of the gyroscope and ω_d is the dither frequency of the gyroscope;

(c) the fringe pattern adjustment ϕ being set at $-\pi/4$;

(d) means to sense said analog gyroscope output signal when the dither velocity is zero to obtain an error signal proportional to the phase error due to the lock-in phenomenon at said time; and

(e) means to add said error signal to the gyroscope output signal to correct for phase errors due to the lock-in phenomenon.

4,248,535

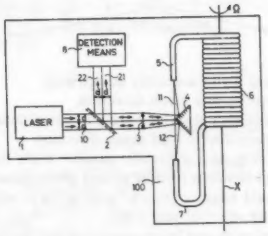
LASER GYROMETER HAVING THE TWO BEAMS EMERGING FROM THE TWO ENDS OF THE FIBER FORMING TWO ADJACENT LIGHT PARTS OF A SINGLE BEAM

Georges Pircher, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jul. 17, 1979, Ser. No. 58,386

Int. Cl.³ G01C *19/64*

U.S. Cl. 356—350 **6 Claims**



1. A laser gyrometer for the measure of the angular speed of a rotating system, comprising a monomode laser source emitting a monochromatic beam, a light guide wound around the rotation axis, separation means comprising an optical element having two reflecting faces and situated in the path of said monochromatic beam for producing first and second secondary beams and directing said secondary beam towards first and second ends of said light guide, respectively; said optical element further collecting said first and second secondary beams emerging from said second and first ends, respectively, and forming two adjacent light parts of a single beam; said gyrometer further comprising optical detection means for measuring the phase-shift between said two parts produced by said rotation.

4,248,536

DUAL WAVELENGTH PHOTOMETRIC DEVICE

Kazuo Hijikata, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 897,367, Apr. 18, 1978, abandoned. This application Jun. 18, 1979, Ser. No. 49,164

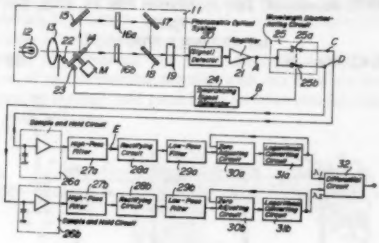
Claims priority, application Japan, Apr. 20, 1977, 52-45432

Int. Cl.³ G01J *3/50;* **G01N** *21/27*

U.S. Cl. 356—416 **2 Claims**

1. A photometric device comprising a photometric optical system for obtaining light outputs each having a predetermined wavelength by transmitting light from a light source to a sample to be measured through different light paths each having a filter, a detector for converting each light output into an electric signal, a switch for deriving first electric signals for one predetermined wavelength and second electric signals for another predetermined wavelength from the output signals of the detector, and a signal treating circuit for treating the first and the second electric signals to obtain a light absorption amount of the sample;

wherein one of the light paths comprises a rotating mirror, reflecting mirrors, a first filter for transmitting a first predetermined wavelength and a half-mirror and the other of the light paths comprises the rotating mirror, a



second filter for transmitting a second predetermined wavelength and the half-mirror and wherein the signal treating circuit comprises two signal paths and a differential circuit for obtaining a difference between the outputs of both signal paths, each signal path including a sample and hold circuit for maintaining the level of the signal supplied thereto, a high-pass filter, a rectifying circuit and a low-pass filter arranged in a predetermined order, and wherein means are included for synchronizing said switch with the rotating mirror.

4,248,537

OPTICAL APPARATUS FOR DETERMINING THE LIGHT EXIT ANGLE FROM A MATERIAL STRIP ILLUMINATED BY A LIGHT BEAD

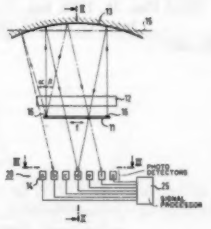
Erwin Sick, Icking, Fed. Rep. of Germany, assignor to Erwin Sick GmbH Optik-Elektronik, Fed. Rep. of Germany

Filed Dec. 22, 1978, Ser. No. 972,301

Claims priority, application Fed. Rep. of Germany, Jan. 4, 1978, 28003512

Int. Cl.³ G01N *21/84, 21/88*

U.S. Cl. 356—431 **45 Claims**



45. A method for determining the presence and nature of irregularities in a surface of a strip material comprising the steps of: scanning a light bead over a surface to thereby generate light beams reflected by the surface at relative angles of reflections which are a function of the condition of the surface at the location at which they are reflected, optically capturing the reflected light beams and directing substantially all light beams reflected by the surface at a plurality of predetermined angles to a like plurality of predetermined, spaced apart locations, sensing light beams directed to the plurality of predetermined locations, generating output signals from light beams spaced at the locations, and processing the output signals to

determine the presence and nature of surface irregularities of the strip material.

4,248,538

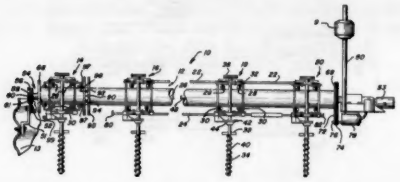
GRAIN STIRRING APPARATUS AND METHOD

Eugene G. Sukup, Sheffield, Iowa, assignor to Sukup Manufacturing Company, Sheffield, Iowa

Continuation-in-part of Ser. No. 859,161, Dec. 9, 1977, abandoned, which is a continuation of Ser. No. 774,156, Mar. 3, 1977, abandoned. This application Feb. 15, 1978, Ser. No. 877,951

Int. Cl.³ B01F *7/00, 7/24*

U.S. Cl. 366—261 **28 Claims**



1. An apparatus for moving grain within a storage bin comprising a laterally-extending sweep member suspended at a first end by a pivotal support means and at a second end by a track means secured to the storage bin, said sweep member including an outer sleeve and an inner shaft independently rotatable, drive means secured to said inner shaft and engaging said track means, at least one stirring member moveably carried on said outer sleeve and depending from said sweep member, means for moving said stirring member inwardly and outwardly along said sweep member in accordance with the direction of rotation of said outer sleeve, and drive mechanism to selectively rotate or counterrotate said outer sleeve and continuously rotate said inner shaft, whereby said sweep member is suspended on said track means by said inner shaft and said drive means propels said sweep member along said track means, and the selective rotation of said outer sleeve causes selective movement of said stirring member along said sweep member.

4,248,539

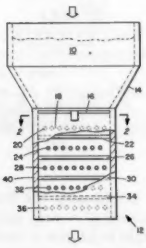
MATERIAL SPREADER

Edwin M. Glocker, 14697 Roxbury Rd., Glenelg, Md. 21737

Filed Dec. 26, 1978, Ser. No. 972,667

Int. Cl.³ B01F *5/06*

U.S. Cl. 366—341 **4 Claims**



1. A device for uniformly spreading a fluent material comprising in combination a vertical column formed by solid enclosing side walls, said column having an open top and an open bottom and being of uniform cross-section from top to bottom, a plurality of stacked rows of spaced parallel bars extending across said column, the bars in each row being uniformly spaced across the entire cross-section of said column, a first set of said rows having the bars therein extending in a first direction, a second set of said rows having the bars therein extending in a second direction which is at an angle with respect to said first direction, the rows of said first set being positioned with respect to the rows of said second set so that the bars in each row are juxtaposed at an angle with respect to the bars in the rows immediately above and below, the bars in every other row of a given set being in the same vertical plane, the bars in intervening rows of said given set being laterally offset with respect to the bars in the rows of said given set immediately above and below, the spacing between bars in any given row and between the rows being sufficient to permit the flow of material through said device without bridging and from the open bottom.

4,248,540

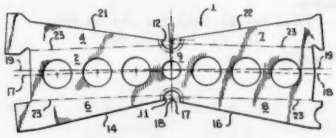
PRINTER ARM

James E. Bellinger, Melbourne, Fla., assignor to Florida Data Corporation, West Melbourne, Fla.

Division of Ser. No. 865,006, Dec. 27, 1977, Pat. No. 4,206,266. This application Apr. 13, 1979, Ser. No. 29,658

Int. Cl.³ B41J *3/12*

U.S. Cl. 400—124 **6 Claims**



5. An arm and stylus assembly comprising

an arm extending in a given direction

a generally cylindrical stylus having its axis extending generally perpendicular to said given direction

said arm having two generally parallel walls each having two edges extending parallel to said given direction means securing said edges of one of said walls to adjacent said edges of the other of said walls,

a web integral with and interconnecting said walls regions of said wall lying between said edges,

said web forming generally a semi-cylinder having an axis generally coaxial with the axis of said stylus and having a diameter substantially equal to the outer diameter of said cylindrical stylus,

said web partially surrounding and contacting said cylindrical stylus,

said web being bonded to said stylus.

4,248,541

SERIAL PRINTER

Leonard A. Poole, Halland, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Jan. 17, 1979, Ser. No. 4,182

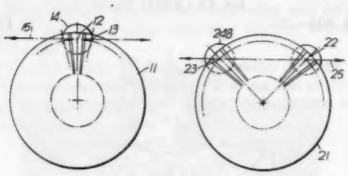
Claims priority, application United Kingdom, Jan. 19, 1978, 02202/78

Int. Cl.³ B41J *1/30*

U.S. Cl. 400—144.2 **4 Claims**

1. A printer comprising: a cylindrical platen having a horizontal symmetrical axis, said platen being adapted to receive a record sheet adjacent thereto on which characters may be produced; and a daisy-wheel having petals rotatable in a plane adjacent said platen and parallel to said axis, one of said petals having a first slug connected thereto with a first character thereon located in a place to cause a reproduction thereof on said record sheet and oriented in a first predetermined position to be vertical when said one petal is ϕ degrees from one side of a central vertical line through the center of said daisy-wheel in the plane thereof, another of said petals having a second character thereon located in a place to cause a reproduction thereof on said record sheet and oriented in a second predetermined

position to be horizontal when said one petal is located in said first predetermined position, said other petal being positioned ϕ degrees from the other side of the same radial portion of said



central vertical line, said first and second characters being spaced apart a distance and lying approximately on a transverse line parallel to said axis when said petals are the aforesaid ϕ degrees from said central vertical line.

4,248,542

TAB STOP ASSEMBLY

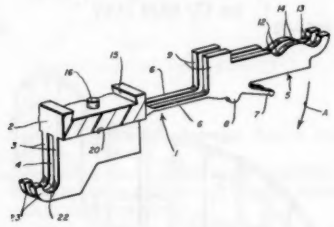
Walter Stuiber, Karben; Otto Gluck, Schoneck, and Rudolf Schicketanz, Butzbach, all of Fed. Rep. of Germany, assignors to Adlerwerke vorm. Heinrich Kleyer A.G., Frankfurt, Fed. Rep. of Germany

Filed Jul. 10, 1979, Ser. No. 56,251

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1978, 2830384

Int. Cl.³ B41J *21/04*

U.S. Cl. 400—298 **3 Claims**



1. A tab stop assembly for typewriters comprising

a body having slots and a plurality of tab stops positioned for movement in said slots between set and unset position,

said body and tab stops being formed as a unit with spring hinges connecting said body and individual tab stops,

said tab stops being bendable about said hinges to enter into associated slots,

said tab stops including spaced set and unset detent formations,

said body having complimentary formations defining with said tab stop detent formations a channel, and

a bar disposed in said channel, and said spring hinges urging said tab stop detent formations against said bar thereby to maintain said tab stops in said slots for movement between set and unset positions.

4,248,543

FINGER PRINT POWDER DISPENSING APPARATUS

John H. Carrington, and Herman Rudolph, both of Raleigh, N.C., assignors to Sirchie Finger Print Laboratories, Inc., Raleigh, N.C.

Filed Feb. 14, 1979, Ser. No. 11,783

Int. Cl.³ B43M *11/06*

U.S. Cl. 401—183 **9 Claims**

1. A finger print powder dispensing apparatus comprising:

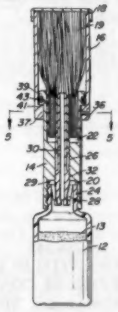
(a) a brush assembly including a brush having very fine bristles capable of holding said finger print powder and a tubular guide element extending into the bristles thereof.

(b) a tubular nozzle,

(c) a one piece connecting member having an opening extending therethrough, said connecting member having a first recess in one end, a second recess on the other end including internal thread means, and a reduced diameter threaded central opening connecting said first and said second recess,

(d) cooperating thread means on said tubular nozzle for mounting said tubular nozzle within said threaded central opening of said connecting member,

(e) means for mounting said brush assembly in said first recess of said connecting member with said tubular nozzle extending through said connecting member into said tubular guide element,



(f) a flexible moisture proof container for holding said powder having an opening therein,

(g) thread means on said container for cooperating with said internal threads of said second recess of said connecting member to direct powder from said flexible container through said tubular nozzle into the bristles of said brush when said flexible container is manually squeezed,

(h) a sleeve member movably mounted on said connecting member and disposed to be extended or retracted with respect thereto,

(i) said sleeve member being disposed to surround the bristles of said brush when extended and to expose said bristles when retracted, and

(j) means for enclosing said brush when said sleeve member is extended.

4,248,544

TUBULAR SCAFFOLDING COUPLING

John McKane, Balloch, Scotland, assignor to Scaffolding Components Limited, Glasgow, Scotland

Filed Mar. 5, 1979, Ser. No. 17,801

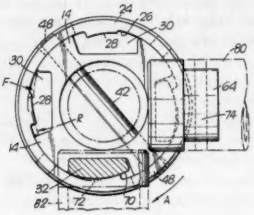
Claims priority, application United Kingdom, Mar. 7, 1978, 8936/78

Int. Cl.² E04G *7/00*; F16B *7/04*

U.S. Cl. 403—49 **6 Claims**

1. A coupling for tubular scaffolding comprising in combination, a body member for location around a standard, a wedge ring member which is co-planar and rotatably associated with the body member, and a plurality of pegs, the body member having a central aperture for receiving the standard therethrough and a plurality of radially disposed insets which combine with the wedge ring member to form radial apertures to receive the pegs therein parallel to the central aperture, the

wedge ring member having a wedging surface for engaging the pegs when the ring member is rotated into a wedging position



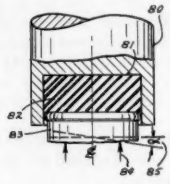
and for disengaging the pegs when the ring member is rotated into a disengaged position.

4,248,545

DEEP DRAWING PRESS WITH BLANKING AND DRAW PAD PRESSURE CONTROL

Dennis H. Andersen, Minnetonka, Minn., assignor to MTS Systems Corporation, Eden Prairie, Minn.

Filed Sep. 12, 1978, Ser. No. 941,387
Int. Cl.³ F16D *1/00*
U.S. Cl. 403—227 **5 Claims**



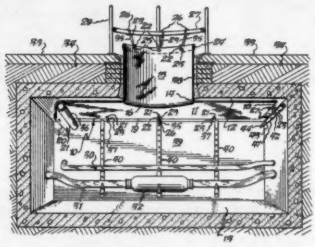
1. For use in combination with devices exerting a force on a reaction member along a generally central axis, a low friction swivel connection between said device and the reaction member, comprising a chamber generally centered along said central axis and having a peripheral wall surrounding the central axis and one end closure wall extending transverse to the central axis and mounted to the peripheral wall, a movable end wall spaced from the one end wall and closing said chamber, a quantity of elastomeric material to substantially fill said chamber, said movable wall being generally flat and extending generally transverse to said central axis and having a periphery fitting closely within and movable relative to the peripheral wall, said movable wall engaging and bearing against a mating surface of said elastomeric material in a position to transfer load exerted generally in direction along said axis to said elastomeric material and then to the one end wall, said elastomeric material flowing upon application of a nonsymmetrical load in direction along said axis to said movable wall to tend to equalize pressure on said elastomeric material across the mating surfaces of the movable wall and elastomeric material, said elastomeric material carrying loads from said movable wall in axial direction to the one end wall without substantial compression of the elastomeric material.

4,248,546

MANHOLE CEILING TENT

Donald J. Danner, 64 Rachelle Dr., Cheektowaga, N.Y. 14227

Filed Jun. 27, 1979, Ser. No. 52,397
Int. Cl.³ E02D *29/14*
U.S. Cl. 404—25 **12 Claims**



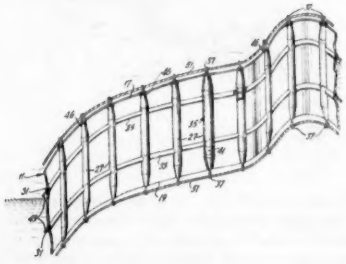
1. A manhole tent comprising sheet-like means for placement in contiguous relationship to the ceiling of a manhole, and opening means in said sheet-like means for permitting ingress and egress of personnel relative to said manhole.

4,248,547

FENCE FOR ENCLOSING IMPURITIES FLOATING ON WATER

Norman D. Brown, Rt. 1, Box 10, Cold Spring, New York, N.Y. 10516

Filed Aug. 31, 1978, Ser. No. 938,468
Int. Cl.³ E02B *15/04*
U.S. Cl. 405—72 **8 Claims**



1. A fence for enclosing impurities floating on water, comprising:

an elongated band of flexible, impermeable material with an upper edge and a lower edge and two side edges, said elongated band being formed from two plies of the same material generally bonded together with the two plies free of one another in selected areas including vertical pockets, each vertical pocket having substantially parallel sides extending from the upper edge to adjacent the lower edge with tapered sides adjacent the lower edge to form an opening at the lower edge;

a plurality of pickets, each one of said pickets being located within a separate vertical pocket and extending at its ends substantially to the lower edge and the upper edge, each of said plurality of pickets being substantially formed from two basic components, one component formed from a material having a density lighter than water and the other component formed from a material having a density heavier than water, said heavy component being located adjacent the end of said picket near said lower edge, said

opening at the lower edge being smaller than the cross-section of the pickets;

a plurality of rings, one ring mounted at each end of each of said plurality of pickets, each ring adjacent the lower edge extending slightly beyond the lower edge and each ring adjacent the upper edge extending slightly beyond the upper edge;

rope means extending through the plurality of rings; and

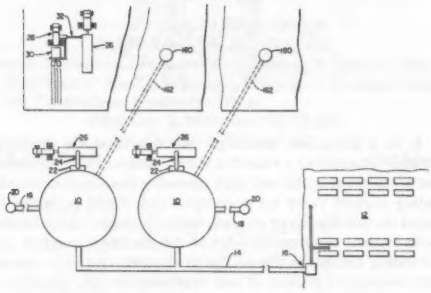
fastening means for closing the vertical pockets at the upper edge to retain each picket within its respective vertical pocket.

4,248,548

SEWAGE DISPOSAL SYSTEM AND APPARATUS

Jack D. Danford, Watkins, Colo., assignor to Danford-Champlin Farms, Ltd., Watkins, Colo.

Division of Ser. No. 263,183, Jun. 15, 1972, Pat. No. 3,865,056.
This application Nov. 4, 1974, Ser. No. 520,712
Int. Cl.³ A01C *23/02*; E02D *3/10*
U.S. Cl. 405—129 **10 Claims**



1. A system for disposing of sewage from a community comprising:

a sewage gathering zone adjacent to the community including means for transporting sewage from the community to the sewage gathering zone;

reservoir means located at a transfer zone in an open area remote from the community;

means running between the gathering zone and the reservoir means to transport sewage from the gathering zone to the reservoir means;

means to produce elongate tunnels in the ground at the open area;

a plurality of batch transport means for running between the reservoir means and the location of the tunnels to transport sewage in batches sequentially from the reservoir means to the location of the tunnels and to then move across the open area; and

means for moving across the open area to discharge the sewage sequentially from each of said batch transport means into the tunnels from one of said batch transport means as other of said batch transport means continue to move from said reservoir means to said elongate tunnels.

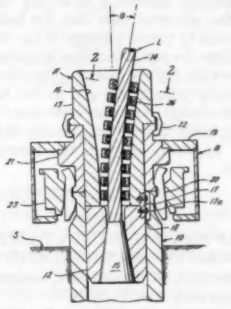
4,248,549

APPARATUS FOR ANCHORING A PLATFORM AT AN OFFSHORE LOCATION

Frank P. Czerewaty, Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.

Filed Jun. 11, 1979, Ser. No. 47,263
Int. Cl.³ E02D *5/54*
U.S. Cl. 405—224 **3 Claims**

1. Apparatus for anchoring a platform at an offshore location, comprising a base adapted to be fixedly mounted at the subsurface beneath the platform, means on the base providing a substantially vertical opening therethrough whose upper end is flared outwardly along a gradually curved surface, a line having its lower end anchored to the base and passing through said opening for extension upwardly to said platform, each line comprising a flexible rope made up of a cluster of strands each including multiple metal wires, and a plurality of rings of rigid material surrounding said rope in spaced apart relation along the portion of the line which passes through the flared upper



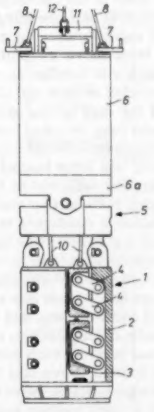
end of the opening through the base so as to maintain the rope out of contact therewith, and a sleeve of ductile material carried within each ring and having an inner surface which fits closely about the rope to conform generally with the irregular exterior surfaces between adjacent strands and between adjacent wires of each strand, each ring having a generally cylindrical outer surface for establishing line contact with the flared upper end of the opening when the line is forced thereagainst.

4,248,550

PILE EXTRACTION APPARATUS

Kurt Blaschke, Saarbrücken-Dudweiler, and Josef Roob, St. Wendel, both of Fed. Rep. of Germany, assignors to Stahl-Und Apparatebau Hans Leffer GmbH, Saarbrücken-Dudweiler, Fed. Rep. of Germany

Filed Feb. 22, 1979, Ser. No. 13,811
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1978, 2807510
Int. Cl.³ E02D *9/02*
U.S. Cl. 405—232 **8 Claims**



1. Apparatus for enabling step-wise extraction of a pile of non-circular cross-section, such as an H-girder, with a conventional pipe-extraction machine, the apparatus comprising:

clamp means for releasably engaging the pile of non-circular cross-section;

a hollow cylinder having an external diameter of a dimension engageable by the conventional pipe extraction machine;

a universal joint for suspending the clamp means from a lower end of the hollow cylinder such that the clamp means is angularly moveable relative to the hollow cylinder; and

a central passage extending upwardly through the clamp means, the universal joint and the hollow cylinder and dimensioned to permit passage of the pile therethrough,

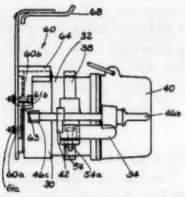
whereby when the pipe-extraction machine engages and lifts and lowers the hollow cylinder, the clamp means engages and partially extracts the pile as the hollow cylinder is lifted and releases and slides downward on the pile as the hollow cylinder is lowered, thereby step-wise extracting the pipe upwardly through the central passage of the apparatus.

4,248,551

END CAP ARRANGEMENT UTILIZING LARGE HEADED BOLTS AND SINGLE END WALL STOP

Jack A. Zimmerman, St. Peters, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Jun. 1, 1979, Ser. No. 44,838
Int. Cl.[3] B65G *53/52*
U.S. Cl. 406—129 **1 Claim**



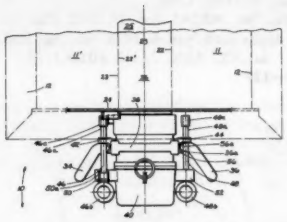
1. In a pneumatic discharge outlet, a rotatable discharge conduit attached to a rotatable control valve and extending outboard of outlet end walls located at opposite ends of the outlet; operating handles to move said control valve between open and closed positions located on said discharge conduit at opposite ends of the outlet; laterally spaced, large headed bolts located on opposite sides of the discharge conduit and threadably engaging a portion of said operating handles, whereby in moving said control valve between open and closed positions, said large headed bolts move circumferentially about said discharge conduit with said handles; an outlet end cap covering said discharge conduit at each end of the outlet, including laterally spaced end cap lugs having openings through which said large headed bolts pass; in closed position the heads of the large headed bolts engaging said end cap lugs to hold the end cap in closed position; said large headed bolts being rotatable in said handles an amount sufficient to free said end cap lugs from said large headed bolts so that said end cap may be removed from the discharge conduit; a dual position end wall stop located on each outlet end wall located relative to the inner end of said large headed bolts such that one said large headed bolt and its associated operating handle cannot be rotated when the large headed bolt is in engaged position with a first portion of said end wall stop, and wherein this position of the operating handle corresponds to the closed position of said control valve, and wherein each end wall stop includes a second stop portion located above said first stop portion and adjacent said discharge conduit, which one of said large headed bolt engages in open position and whereby, if the end cap is removed from the near end of the outlet to take a sample, the control valve can be rotated a sufficient distance such that a sample can be taken from the said near end of the outlet without the large headed bolt at the opposite end of the outlet abutting the rotational stop at said opposite end; said large headed bolts having bolt stops attached to their inner ends whereby removal of the bolts from said operating handles is prevented.

4,248,552

END CAP ARRANGEMENT UTILIZING LARGE HEADED BOLTS

Richard H. Dugge, St. Louis, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Jun. 1, 1979, Ser. No. 44,839
Int. Cl.[3] B65G *53/52*
U.S. Cl. 406—129 **6 Claims**



1. In a pneumatic discharge outlet, a rotatable discharge conduit attached to a rotatable lading control valve extending outboard of the outlet end wall; operating handles to move said lading control valve between open and closed positions located on said discharge conduit; laterally spaced, large headed bolts located on opposite sides of the discharge conduit, and extending parallel to the discharge conduit; said bolts threadably engaging a portion of said operating handles, whereby in moving said control valve between open and closed positions, said large headed bolts move circumferentially about the discharge conduit with said handles; an outlet end cap covering said discharge conduit including laterally spaced end cap lugs having openings through which said large headed bolts pass; in closed position the heads of the large headed bolts engaging said end cap lugs to hold the end cap in closed position; said large headed bolts being rotatable in said handles an amount sufficient to free said end cap lugs from said large headed bolts so that said end cap may be removed from the discharge conduit; and at least one end wall stop provided on said outlet end wall located relative to the inner end of one of said large headed bolts such that at least one of the large headed bolts and its associated operating handle cannot be rotated when the large headed bolt is in engaged position with the end cap and wherein this position of the operating handle corresponds to the closed position of said control valve.

4,248,553

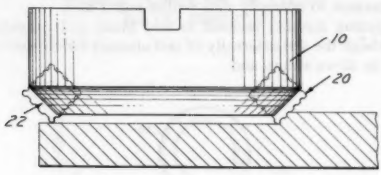
CUTTING INSERT CONFIGURATION

Rolf H. Kraemer, Gurnee, Ill., assignor to Fansteel Inc., Chicago, Ill.

Filed Sep. 29, 1978, Ser. No. 947,012
Int. Cl.[3] B26D *1/00*
U.S. Cl. 407—114 **6 Claims**

1. An even sided polygonal cutting insert formed of a hard wear resistant material and comprising a body having substantially parallel polygonal faces connected by a peripheral wall which forms cutting edges at the juncture thereof with at least one of said faces, the peripheral wall having notches formed therein extending transversely to said faces and interrupting the cutting edge in regions uniformly spaced therealong and having n notches interrupting a pair of cutting edges on one face and n plus m notches interrupting another pair of cutting

edges on said one face, the notches interrupting said pair of cutting edges on said one face being staggered relative to the



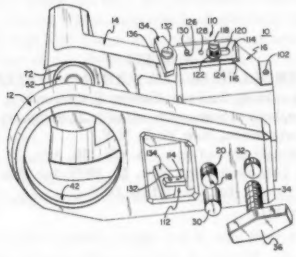
notches interrupting said another pair when said edges are viewed in superposed relation.

4,248,554

DOOR BORING JIG SYSTEM

August S. Boucher, Leominster, and Clarence R. Haaker, Fitchburg, both of Mass., assignors to Engineered Products Security Corporation, Leominster, Mass.

Filed Oct. 1, 1979, Ser. No. 80,535
Int. Cl.³ B23B *39/00, 47/28*
U.S. Cl. 408—97 **11 Claims**



1. A door boring jig system for aligning a cross bore and edge hole in a door comprising:

a pair of spaced clamping jaws; a first hole in one clamping jaw locating the position of said cross bore; adjustment means for moving said clamping jaws toward and away from each other to adjust to the width of a door to be bored; clamping means for clamping said jaws to said door to be bored; a bushing mounting hole in the other said clamping jaw aligned with said first hole; a split bushing having a flange at one end and a hinge at each end, mounted in the bushing mounting hole, each hinge including a pair of pins mounted in separate parts of the split bushing and a link moveable mounted to both pins; each said link being loosely fitted to at least one of said pins to enable said bushing parts to slide as well as pivot relative to each other;

guide means mounted between said clamping jaws remote from said first hole and bushing mounting hole and having an edge hole guide for defining the position of the edge hole; and

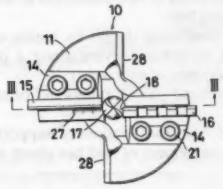
edge accommodator means including first and second mounting means carried by said guide means and first and second accommodator members pivotably attached to said mounting means for locating said jig system on squared and beveled edge doors.

4,248,555

DRILL ASSEMBLY

Masanori Satou, Suita, Japan, assignor to Showa Machine Industries Co., Ltd., Osaka, Japan

Filed Aug. 9, 1979, Ser. No. 65,045
Int. Cl.³ B23B *51/00*
U.S. Cl. 408—225 **6 Claims**



1. A drill assembly comprising:

a body being formed in the center thereof with a center hole axially extending, with two angular cuts for chip ejection, and in the upper surface thereof with two recesses extending radially,

a center drill mounted in said center hole,

a first insert having a straight cutting edge,

a second insert having a notched cutting edge formed with a plurality of notches,

said first and second inserts being adapted to be clamped in said recesses in such positions that the notched edge of said second insert will be disposed above the straight edge of said first insert, and

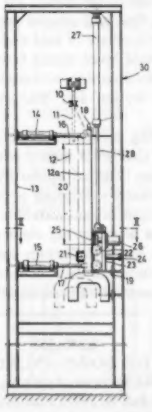
means for clamping said first and second inserts in said recesses.

4,248,556

METHOD FOR SMOOTHING THE SURFACE OF BAR MATERIAL

Willy Jakobs, and Heinz Caspelherr, both of Cologne, Fed. Rep. of Germany, assignors to Klockner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Mar. 30, 1979, Ser. No. 25,345
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1978, 2813646
Int. Cl.³ B23C *3/13*
U.S. Cl. 409—131 **1 Claim**



1. A method for smoothing bar material comprising the steps of:

suspending a bar to be smoothed from a moving conveyor;

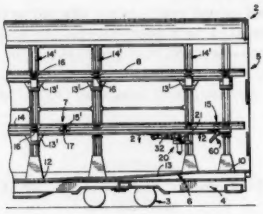
moving said bar into proximity with stationary support members;
clamping said bar against said stationary support members;
simultaneously engaging a first surface of said bar with a first pair of rollers;
moving a second pair of rollers into engagement with a second opposite side of said bar;
moving a smoothing device connected to said rollers along a length of said bar;
guiding said smoothing device by means of said rollers to direct said smoothing device along a path following a general curvature of said bar;
moving said second pair of rollers out of engagement with said bar;
releasing said bar from stationary support members; and
continuing movement of said bar along said conveyor.

4,248,557

RAILWAY CAR COUNTER BALANCED TILTING DECK

David J. Roldness, San Diego; Thomas H. Watson, Bonita, and Gary D. Wonacott, San Diego, all of Calif., assignors to Pullman Incorporated, Chicago, Ill.

Filed Mar. 1, 1979, Ser. No. 16,643
Int. Cl.[3] B60P *3/08;* **B61D** *3/04, 3/16;* **F16F** *1/34*
U.S. Cl. 410—27 **6 Claims**



1. In a railway car for carrying vehicles having a frame mounted thereon for supporting a vehicle-carrying deck wherein a movable section of said deck is mounted for pivotal movement about a generally horizontal axis between an upper raised position and a lower vehicle-carrying position, an improved counterbalancing assembly for said movable deck comprising:
lever means pivotally supported on said frame, said lever means having first and second ends and being pivotally supported intermediate of said ends,
said first end of said lever means being in engagement with said movable deck section intermediate of the pivot axis of said movable section and the pivot axis of said lever means,
compressive spring means reactively connected with the second end of said lever means whereby said first end of said lever means is urged upwardly against said movable deck section thereby exerting a counterbalancing force against the weight of said movable deck section, and
said spring means being spring elements exhibiting substantially constant force/deflection spring characteristics to facilitate movement of said movable deck section above and below a counterbalanced equilibrium point.

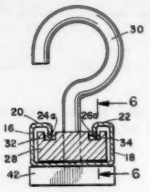
4,248,558

TIE DOWN ANCHOR

Ed F. Lechner, 19963 Serrano, Apple Valley, Calif. 92307

Filed Jul. 6, 1979, Ser. No. 55,187
Int. Cl.[3] B60P *7/06;* **B61D** *45/00;* **B66J** *1/22*
U.S. Cl. 410—104 **7 Claims**

1. A tie down fastening device comprising:
an elongated continuous channel defining a continuous T-slot defined by side walls defining an edge directed inward toward the interior of said channel,
a slider block slidably mounted in and having sufficient clearance to normally slide within said T-slot,
a fastening member secured to said block and extending through the slot externally of said channel for connecting to tie down straps, and



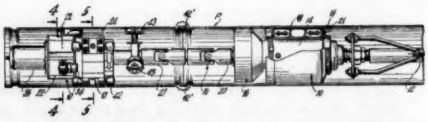
gripping means carried by said slider block for gripping said channel member and anchoring said slider when elevated in selected positions along said channel wherein said edge of each of said side walls overlie a portion of the surface of said block, and
said gripping means comprises serrations formed in said block for engagement with said edges.

4,248,559

CONTROLLED DEPTH SCORING SYSTEM

Carl M. Deckenback, Jackson; George T. Catrombon, and Lester A. Rowe, both of Somerville, all of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 828,205, Aug. 26, 1977, abandoned. This application Mar. 23, 1979, Ser. No. 23,406
Int. Cl.[3] B23D *5/02*
U.S. Cl. 409—307 **5 Claims**



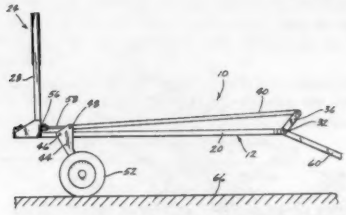
1. Apparatus for the controlled depth scoring of a continuous spiral groove on the interior walls of conduits comprising a scoring assembly having inter-connected:
(a) rotatable controlled depth score cutting means,
(b) rotatable centering means,
(c) rotary motor having a stator,
(d) means for transmitting rotary motion from (c) to (a) and (b), and
(e) an anti-rotational device, mounted to said stator and contacting the interior walls of said conduits during operation of said scoring assembly, wherein said contact is adapted to prevent rotation of said stator while allowing longitudinal movement of said stator within said conduit; and
further comprising feed means connected with said scoring assembly for longitudinally passing said scoring assembly through the interior of said conduits at a controllable uniform speed, during rotation of said cutting means and its engagement with said conduit to thereby cut a spiral groove in said conduit.

4,248,560

BALE CARRIER AND METHOD FOR USING SAME

Gerald L. Roose, R.F.D. 3, Pella, Iowa 50219

Filed Jun. 1, 1978, Ser. No. 911,335
Int. Cl.[3] B60P 3/00
U.S. Cl. 414—24.5 4 Claims



1. A transporting device for transporting a pen and alternatively a plurality of cylindrical bales, said transporting device comprising:

a horizontally disposed U-shaped frame comprising a front frame member and first and second side frame members extending rearwardly from the opposite ends of said front frame member to terminate in rearward ends spaced apart from one another, the lengths of said side frame members being at least greater than the cylindrical length of at least two of said bales and the distance between said side frame members being less than the diameters of said bales;

first and second wheel supports, each pivotally mounted to one of said side frame members adjacent said rearward ends thereof for pivotal movement about a first axis between an upstanding position supporting said U-shaped frame in an upper position and a collapsed position, supporting said U-shaped frame in a lower position adjacent the ground,

first and second rods each having a forward end and a rearward end, said forward end being pivoted to one of said wheel supports about a second axis spaced from said first axis;

a rocker shaft rotatably supported by said front frame member for rotation about a third horizontal axis parallel to said first and second axes;

hitch means fixed to said rocker shaft and extending forwardly therefrom for connection to a prime mover,

first and second arm members having first ends hinged to said forward end of said first and second rods respectively, said arm members having second ends fixed to said rocker shaft for rotation in unison therewith about said third axis;

power cylinder means operatively connected to said U-shaped frame and said wheel supports for pivotally moving said wheel supports to raise and lower said frame relative to the ground;

an upstanding inverted U-shaped support having the lower inverted U-shaped ends thereof connected to said side frame members adjacent the rearward ends thereof to bridge the distance therebetween, the height of said inverted U-shaped support being greater than the diameter of said bales,

said inverted U-shaped member being the only cross member spanning the distance between said side frame members along the lengths thereof rearwardly of said forward member whereby at least two bales will fit end to end between said side members;

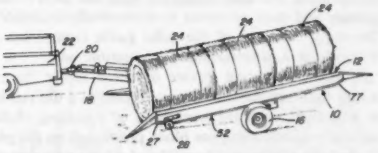
a livestock pen resting on said frame members and being selectively removable therefrom whenever said frame members are used to carry said bales.

4,248,561

ROUND BALE HANDLING DEVICE

Clarence C. Graves, P.O. Box 648, Clinton, Okla. 73601

Filed Feb. 6, 1979, Ser. No. 9,961
Int. Cl.[3] B60P 1/28, 1/38
U.S. Cl. 414—24.5 11 Claims



1. A round foliage bale handling apparatus for picking up and transporting a bale of foliage, said apparatus comprising in combination:

an axle having a pair of support wheels attached thereto;

a longitudinally extending bed having a pair of longitudinally spaced ends and connected along the longitudinal middle thereof to said axle, said bed being disposed for pivotal motion about said axle for causing either of said ends to assume a position immediately adjacent a support surface for said wheels; said bed including a pair of laterally spaced, parallel beam members, each beam member including a slanted bale contacting face running for substantially the entire extent of each beam, said faces being disposed in a downwardly converging arrangement for cradling a bale therebetween; and

power actuated conveyor means attached to each of said beams for causing bale movement along said faces, said power actuated conveyor means including a separate endless conveyor chain disposed longitudinally of each of said beams; and further wherein each of said beams includes a longitudinally extending recess in its respective bale contacting face, one portion of each of said conveyor chains being partially disposed respectivley in each of said recesses for causing the weight of a bale to be borne by said faces rather than said chains; spike means distributed along said conveyor chains for extending upwardly from said recesses for engaging said bales to move said bales along said faces; and

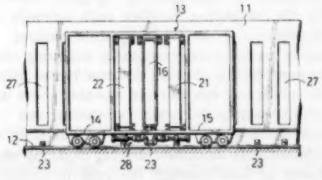
idler means disposed on each end of each beam for supporting the ends of said conveyor chains, each of said idler means including a walker disk means comprising a disk element having a smooth outer periphery for contacting and providing lift to a bale as it is transported over the ends of said conveyor chains without gouging or biting into the bale.

4,248,562

COKE GUIDE CAR

Akira Tsuzuki, Yokohama, and Hiroshi Tobitani, OazaKukisaki, both of Japan, assignors to Koritsu Kikai Kogyo Company Limited, Tokyo, Japan

Filed Oct. 12, 1979, Ser. No. 84,095
Int. Cl.[3] C10B 29/00; B65G 25/00
U.S. Cl. 414—212 2 Claims



1. A coke guide car arrangement comprising:

carriage means mountable to a platform for movement therealong;

a coke guide cage movable to and fro along a central path on the floor of the carriage means;

a jamb cleaner and a door extractor juxtaposed on opposite sides of the carriage means and mounted on respective pivot means on the front portion of the carriage means, the pivot means being movable to and fro such that each of said jamb cleaner and door extractor is alternatively movable to and fro along the path of the coke guide cage when rotated inwardly to a predetermined orientation; and

an automatic centering device mounted under the carriage means for stopping the carriage means at a desired location in alignment with the centerline of a coking chamber in association with a stopper block positioned on the platform;

such that the guide car is capable of conducting one cycle of operation including door removal, jamb cleaning, guidance of pushed out coke and reinstallation of the removed door at said desired location without moving the carriage means.

4,248,563

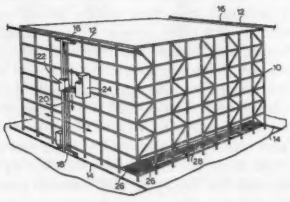
SYSTEMS FOR THE STORAGE AND RETRIEVAL OF ITEMS AND APPARATUS THEREFOR

Nick Fur, 252 Camelot Dr., Burlington, Ontario, Canada (L7L 2G7)

Division of Ser. No. 789,701, Apr. 21, 1977, Pat. No. 4,114,767, which is a continuation of Ser. No. 690,003, May 26, 1976, abandoned. This application Aug. 22, 1978, Ser. No. 935,770

Int. Cl.[3] B65G *1/06*

U.S. Cl. 414—280 **15 Claims**



1. A system for the storage and retrieval of individual items, such as loaded pallets, comprising:

(a) a storage frame having two parallel faces and providing a plurality of parallel storage paths for the said items extending from one to the other of the said two parallel faces;

(b) each storage path providing a plurality of linearly equally-spaced successive stations each adapted to receive a respective item;

(c) means at one of the said parallel frame faces for inserting an item into a selected path, and means at the other of the said parallel frame faces for retrieving an item from a selected path;

(d) an advancing member for each path movable in the path a distance equal to the spacing between two successive stations;

(e) a plurality of item driving engaging means mounted along the advancing member each drivably engagable with a respective item at a respective station;

(f) detector means at each station for detecting the presence of an item therein, the said detector means being pivoted to the advancing member and movable about its pivot by an item present in the respective station; and

(g) means mechanically connecting each detector means and the immediately successive driving engaging means in the direction of feed through the path to disable the said driving engaging means upon the detection of an item by the respective detector means.

4,248,564

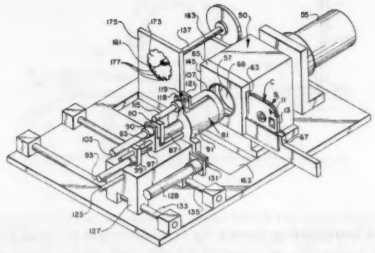
METHOD AND APPARATUS FOR OPENING A FILM CARTRIDGE

Ralph Gentile, and John S. Lercher, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 5, 1979, Ser. No. 9,010

Int. Cl.[3] B65G *65/04*; B65D *49/12*

U.S. Cl. 414—412 **11 Claims**



1. A method of removing a film disk from a cartridge in which the film disk is located between a pair of wall members having (a) respective peripheral edge portions secured together and (b) respective central portions overlying the film disk, said method comprising the steps of:

separating the central and peripheral portions of each wall member, though maintaining the central portions overlying the film disk; and

removing one of the central portions from the other to provide access to the film disk.

7. An apparatus for removing a film disk from a cartridge in which the film disk is located between a pair of wall members having (a) respective peripheral edge portions secured together and (b) respective central portions overlying the film disk, said apparatus comprising:

means for separating the central and peripheral portions of each wall member, though maintaining the central portions overlying the film disk; and

means for removing one of the central portions from the other to provide access to the film disk.

4,248,565

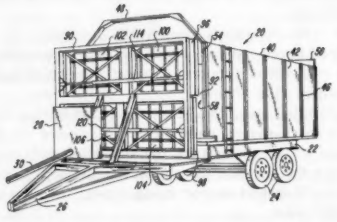
LIVESTOCK FEEDING APPARATUS

Donald Wamsley, Coalmont, Colo. 80430

Filed Jun. 5, 1979, Ser. No. 45,631

Int. Cl.[3] B60P *1/00*

U.S. Cl. 414—518 **12 Claims**



1. Apparatus for distributing a livestock feed such as hay, comprising:

a vehicle frame movable along the surface of the ground;

a bin upstanding from said frame and into which said feed initially is received;

means defining an opening in one upright end wall of said bin;

a conveyor effectively forming at least a portion of a bottom wall of said bin and movable to urge said feed outwardly from said bin through said opening;

an upright carriage upstanding from said frame, spaced outwardly of said bin from said opening and toward which said feed is urged by said conveyor, at least one lateral and vertically-oriented slot being defined between said carriage and said bin and located in correspondence with a side of said frame so that feed may be dispensed through said slot alongside said vehicle as the latter is moving;

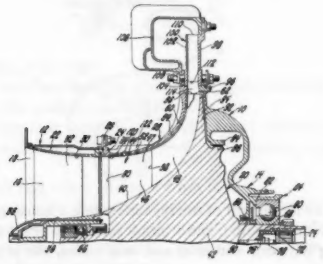
and a repetitively-reciprocating dispenser mounted on the side of said carriage facing said opening for dispensing through said slot incremental portions of said feed urged toward said carriage by said conveyor.

4,248,566

DUAL FUNCTION COMPRESSOR BLEED

Dennis C. Chapman, Greenfield, and David T. Sayre, Greenwood, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 6, 1978, Ser. No. 949,143
Int. Cl.³ F01D *17/00*
U.S. Cl. 415—26 **3 Claims**



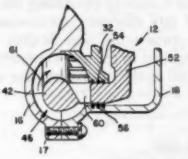
1. A flow controlled gas compressor comprising: an annular stationary shroud with an inner wall having an inlet and an outlet with a meridional length therebetween, a rotor located within said shroud including a plurality of radially outwardly directed blades thereon, each including a leading edge, a trailing edge and an outer tip, said outer tip being free and located in close spaced relationship to said inner wall, pressure generating means including said rotor for producing a static pressure just inside the shroud at low meridional distances in the range of 0%–5% of the meridional length which is less than ambient pressure at all speeds of the rotor and also for producing a static pressure level at higher meridional distances greater than 30% of the meridional length which is higher than ambient pressure at all speeds of the rotor, said pressure generating means including said rotor being operative to produce a static pressure level at an intermediate meridional distance on said inner wall in the range of 5%–25% of the meridional length which is greater than ambient pressure in the part speed range of operation of said rotor and less than ambient pressure at the same intermediate meridional distance at speeds of operation higher than the part speed range, and a bleed hole located through said shroud at the intermediate meridional distance on said inner wall and in communication with ambient air, said bleed hole at rotor speeds above the part speed range of operation allowing inflow of ambient air through said bleed hole to add to total inlet flow to said rotor for increased flow capacity of said rotor under high speed conditions of operation, said bleed hole serving to bleed air flow from the rotor of said compressor to ambient air at part speed range of operation thereof to flow stabilize the compressor at part speed phases of operation thereof.

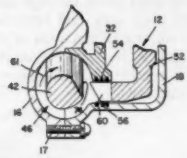
4,248,567

ENERGY TRANSFER MACHINE

Hans Egli, Santa Monica; Joe L. Byrne, and James H. Nancarrow, both of Torrance, all of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Division of Ser. No. 892,368, Mar. 31, 1978, Pat. No. 4,197,051.
This application Jul. 25, 1979, Ser. No. 60,100
Int. Cl.³ F04D *5/00*
U.S. Cl. 415—53 T **6 Claims**





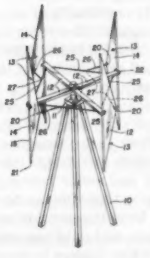
1. An energy transfer machine comprising a housing having a fluid inlet and a fluid outlet generally adjacent to each other, and forming a generally toroidal volume between said inlet and outlet; a stator ring suspended within the toroidal volume and combining with said housing to define a generally circumferential passage having an annular cross section, said stator ring including an enlarged block seal interposed between said fluid inlet and outlet to cause fluid flowing through said housing to flow through said flow passage; a rotatable rotor including a cascade of blades operably disposed for energy transfer coaction with fluid in the flow passage and configured to cause the fluid to flow upon rotor rotation in a generally spiralling path about said stator ring, said rotor being mounted with respect to said housing for axial translation with respect to said stator ring; and means for axially translating said rotor between a loaded position with the blades in close running clearance with said stator ring to cause fluid to flow in a spiralling path about said stator ring, and an unloaded position with the blades axially withdrawn from said stator ring for controllably preventing the fluid from flowing in a generally spiralling path about said stator ring for controllably unloading the machine.

4,248,568

ROTOR BLADE STRUCTURE AND MOUNTING FOR VERTICAL AXIS WIND MACHINES

William L. Lechner, P.O. Box 1598, Pittsfield, Mass. 01201

Filed Dec. 11, 1979, Ser. No. 102,375
Int. Cl.³ F03D *3/06*
U.S. Cl. 416—132 B **1 Claim**



1. In a vertical axis wind machine, a rotor drivingly connected to a vertical axis driven shaft, plural circumferentially spaced horizontal rotor arms fixed to said shaft and radiating therefrom, each rotor arm having a vertical through opening near its outer end, a vertical axis whip rod engaged in the through opening of each rotor arm and held therein against

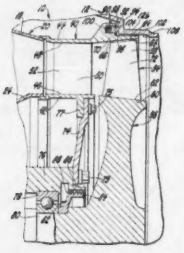
axial displacement at least in the downward direction and extending substantially equidistantly above and below the rotor arm, an approximately triangular flexible sail carried by each whip rod and being configured as a shallow isosceles triangle having its long base extending longitudinally of the whip rod and substantially coextensive therewith and having an obtuse angular apex substantially at the horizontal plane of rotation in which the rotor arms are disposed, each flexible sail being constructed to provide thereon a vertical axis tubular hem along said long base and loosely receiving the whip rod above and below the adjacent rotor arm, each sail having a reinforced notch through said hem loosely straddling the adjacent rotor arm, taut horizontal guy elements interconnecting the outer end portions of the rotor arms, and flexible equal length sail restraint elements attached to the guy elements near their centers and being connected to the obtuse angular apices of said sails.

4,248,569

STATOR MOUNTING

Glenn W. Thebert, Carmel, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 13, 1978, Ser. No. 959,750
Int. Cl.[3] F01D *25/26*
U.S. Cl. 415—138 **2 Claims**



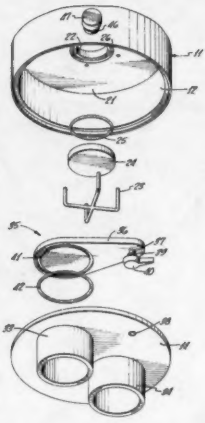
1. A turbine nozzle vane support assembly comprising an outer housing, an annular inlet nozzle with a plurality of circumferentially spaced radial turbine nozzle vanes, said nozzle having an outer ring and an inner ring joined to said vanes to define flow paths therethrough, a rigid support member, means for rigidly securing said support member to said inner ring so as to prevent relative movement therebetween, an internal bearing support housing including a bearing assembly, means rigidly connecting said rigid support member to said bearing housing, a turbine shaft rotatably supported by said bearing assembly for rotation with respect to said bearing support housing and for radial movement with said rigid support member, said outer ring having a trailing rotor blade track extension thereon located axially rearwardly of said outer ring and defining an inner surface, a gas turbine rotor connected to said shaft including a plurality of radial blades thereon each having a tip located in close spaced relationship to the inner surface, said turbine rotor being supported rigidly by said support member with respect to said inner and outer rings to cause simultaneous deflection of the rotor shaft and said inner and outer ring to maintain a straight flow path through the nozzle vanes and rotor blades, and flexible seal means interconnected between said inlet nozzle and said outer housing to seal against gas bypass between a region supplying air to the combustor and a downstream exhaust from the gas turbine engine during such simultaneous deflection, said rigid support member having less tendency to deflect when subject to thermal and mechanical loads than said flexible seal means, said rigid support member and said flexible seal means together producing uniform mechanical deflection of said nozzle and said rotor to ensure continuous alignment of the flow path through said nozzle and the flow path through said blades on the rotor as well as uniform displacement of the outer flow path members defined by the outer ring and the rotor blade track extension thereby to maintain a close running clearance between the blade track inner surface and the outer tips in response to changes in the operating temperature and mechanical deflection within the gas turbine engine.

4,248,570

AIR BLOWER FOR SPAS OR THE LIKE

William W. Conger, IV, 9552 Orange Ave., Anaheim, Calif. 92804

Filed Apr. 17, 1978, Ser. No. 896,998
Int. Cl.[2] F01D *17/18*
U.S. Cl. 415—148 **2 Claims**



1. In an air blower of the type including a housing having an air inlet, an air outlet, and a motor and a fan positioned in said housing between said inlet and said outlet, the improvement comprising:

a second outlet in said housing;

a threaded, hollow neck projecting from said housing, coaxially with said second outlet; and

a threaded cap engaging said neck and preventing air flow therethrough, said cap having at least one hole in the side thereof, said hole being blocked by said neck to prevent air flow therethrough in one position of said cap and being clear of said neck to permit air flow therethrough in another position of said cap.

4,248,571

CENTRIFUGAL IMPELLERS

Leonard J. Sieghartner, Coal Valley, Ill., assignor to Roy E. Roth Company, Rock Island, Ill.

Filed Sep. 11, 1978, Ser. No. 941,019
The portion of the term of this patent subsequent to Dec. 11, 1996, has been disclaimed.
Int. Cl.[3] F04D *13/12, 24/18*
U.S. Cl. 416—175 **8 Claims**

1. In a centrifugal impeller for use in a centrifugal-turbine pump capable of pumping liquids at or near the boiling point thereof with suction heads not greater than about one foot, the impeller including a housing having a front, elongated entrance portion through which such liquid enters said housing, and a rear discharge portion from which liquid entering said housing through said discharge portion is discharged from said housing during operation of said pump, and said pump including drive means including a drive shaft mounted in said housing and operatively connected thereto for rotating the latter, the combination of:

a. vane means removably mounted in said entrance portion

for rotation therewith for feeding such liquid through said entrance portion to said discharge portion during such rotation of said housing with said drive shaft,

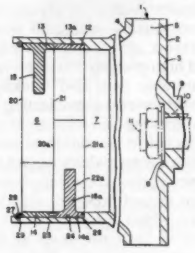
b. said vane means comprising

(1) a vane insert comprising

(a) an outer annular flange, and

(b) a plurality of vanes projecting substantially radially inwardly from said flange in annularly spaced relation to each other,

c. said vane insert being mounted in said entrance portion for rotation therewith, with the outer peripheral surface of said flange being disposed in closely adjacent relation to the inner surface of said entrance portion, and



d. said flange having

(1) a front face through which such liquid enters in entering into said entrance portion, and

(2) a rear face through which said liquid exits in flowing through said entrance portion to said discharge portion, and

e. each of said vanes having a front face,

(1) facing in the direction of rotation of said impeller insert when the latter is so rotating with said drive shaft, and

(2) disposed at a rearwardly opening obtuse angle to said front face of said flange.

4,248,572

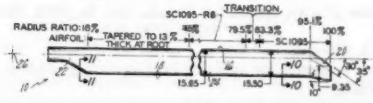
HELICOPTER BLADE

Evan A. Fradenburgh, Fairfield, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 11, 1978, Ser. No. 968,595

Int. Cl.³ B64C *27/46*

U.S. Cl. 416—228 **10 Claims**



1. A cambered helicopter blade having:

(A) a leading edge,

(B) a trailing edge,

(C) a tip portion,

(D) a root portion adapted to be connected to the helicopter hub for rotation therewith, and

(E) an airfoil shape central portion extending between said root and tip portions,

(F) said tip portion being both swept and tapered, and

(G) said blade being fabricated to have substantially −10° linear twist from approximately the 30 percent span station outwardly and reversing to nonlinear positive twist inwardly thereof.

4,248,573

HYDRAULIC CONTROL SYSTEM FOR VARIABLE DISPLACEMENT PUMP

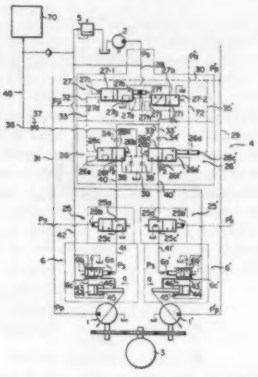
Kazuo Uehara, Tokyo; Hideaki Tohma, Yokohama, and Yoshito Sato, Hirakata, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Sep. 24, 1979, Ser. No. 78,029

Claims priority, application Japan, Sep. 22, 1978, 53/116018

Int. Cl.³ F04B *49/00*

U.S. Cl. 417—216 **7 Claims**



1. A hydraulic control system for a variable displacement pump, comprising:

prime mover means for driving said variable displacement pump;

a fixed displacement pilot pump driven by said prime mover means;

pressure compensating valve means connected to the delivery side of said pilot pump and to said variable displacement pump through a first pilot circuit, said pressure compensating valve means being adapted to prevent said prime mover means from being imposed an excessive load;

cut-off control valve means connected to said pressure compensating valve means and to said variable displacement pump through a second pilot circuit, said cut-off control valve means being adapted to limit the supply pressure from said pressure compensating valve means under preset cut-off value thereof; and

servo booster means connected to said cut-off control valve means and said pilot pump for controlling the displacement of said variable displacement pump.

4,248,574

HYDRAULIC CONTROL SYSTEM FOR VARIABLE DISPLACEMENT PUMPS

Kazuo Uehara, Tokyo; Hideaki Tohma, Yokohama, and Yoshito Sato, Hirakata, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Toyko, Japan

Filed Sep. 24, 1979, Ser. No. 78,030

Claims priority, application Japan, Sep. 22, 1978, 53-116019

Int. Cl.³ F04B *49/00*

U.S. Cl. 417—216 **4 Claims**

1. A hydraulic control system for variable displacement pumps, comprising in combination:

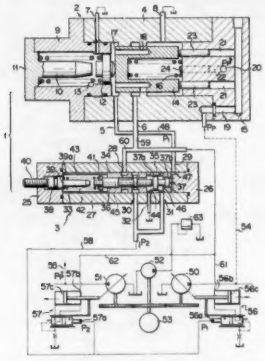
at least two variable displacement pumps;

prime mover means for driving said variable displacement pumps;

a fixed displacement pilot pump driven by said prime mover means;

pressure compensating valve means comprising two-stage proportional pressure reducing valve means and negative proportional pressure reducing valve means, said two-

stage proportional pressure reducing valve means being connected to said variable displacement pumps and said fixed displacement pilot pump and adapted to increase output pressure therefrom when the sum of output pressures from said variable displacement pumps is increased while allowing the output pressure therefrom to be decreased when the sum of the output pressures from said variable displacement pumps is decreased, said negative proportional pressure reducing valve means being connected to said two-stage proportional pressure reducing valve means and said fixed displacement pilot pump and



adapted to decrease output pressure therefrom when the output pressure from said two-stage proportional pressure reducing valve means is increased while allowing the output pressure therefrom to be increased when the output pressure from said two-stage proportional pressure reducing valve means is decreased;

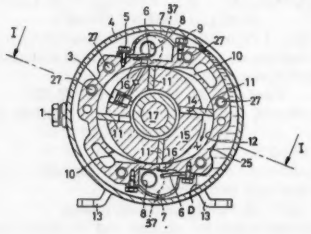
at least two servo booster means each being connected to said respective variable displacement pumps for controlling the displacements therefrom, said servo booster means being connected to the output of said negative proportional pressure reducing valve means and said fixed displacement pilot pump.

4,248,575

ROTARY FLUID PRESSURE BIASED VANE COMPRESSOR WITH PRESSURE RELEASE MEANS

Risaburo Watanabe; Masami Ohtani, and Naoki Hashizume, all of Higashimatsuyama, Japan, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 29, 1979, Ser. No. 7,409
Int. Cl.³ F04C *18/00, 29/02, 29/10*
U.S. Cl. 418—93 **15 Claims**



1. A vane compressor, comprising a hollow stator having an inner circumference; a rotor received in said stator for rotation about an axis, said rotor being provided with a plurality of throughgoing passages extending radially and outwardly relative to said axis, said rotor having an outer circumference sealingly contacting said inner circumference of said stator at least along one contacting line, said outer circumference of said rotor constituting together with said inner circumference of said stator at least one working chamber located between said inner and outer circumferences; a plurality of vanes, each received in one of said passages and having an outer end face directed towards said inner circumference of said stator and an inner end face directed away from said inner circumference of said stator, said vanes being shiftable radially in the respective passages relative to said axis; means forming a high-pressure chamber; means for supplying pressure medium under a first pressure to said inner end faces of said vanes to thereby urge said vanes radially outwardly relative to said axis for engagement of said outer end faces with said inner circumference of said stator, said pressure medium supplying means including an annular chamber operatively connected with said high-pressure chamber so that a pressure in said annular chamber is equal to that in said high-pressure chamber, said annular chamber being communicable with said working chamber, said inner end faces of said vanes communicating with said annular chamber; means for rotating said rotor about said axis whereby said vanes are subjected to an additional second pressure resulting from centrifugal force, which second pressure additionally urges said vanes against the inner circumference of said stator, said first and second pressures together constituting a cumulative pressure which above a predetermined pressure level causes undesired frictional losses at the interfaces between said outer ends of said vanes and the inner circumference of said stator; and means for releasing at least a portion of said pressure medium to thereby decrease said first pressure by a predetermined value so as to prevent said cumulative pressure from exceeding predetermined level and thereby to eliminate said undesired frictional losses, said pressure releasing means including passage means connecting said annular chamber with said working chamber, and valve means operative for movement in said passage means between a first position in which said annular chamber is disconnected from said working chamber so as to prevent any pressure medium to flow from said annular chamber into said working chamber, and a second position in which said annular chamber is connected with said working chamber for permitting the pressure medium flow from said annular chamber into said working chamber, said valve means being operable in response to increase of centrifugal force thereon during rotation of said rotor to move from said first position to said second position.

4,248,576

APPARATUS FOR COATING THERMOPLASTIC FILM

Aleck M. Birks, Buffalo Grove, Ill.; Michael I. Haluk, Toronto, and Edward M. Rothenberg, Willowdale, both of Canada, assignors to Canadian Industries Limited, Montreal, Canada

Filed Jun. 11, 1979, Ser. No. 47,305
Claims priority, application Canada, Jun. 14, 1978, 305397
Int. Cl.³ B05C *3/00, 9/04*
U.S. Cl. 425—68 **2 Claims**

1. An apparatus for applying coating to thermoplastic film comprising:

(A) an upwardly oriented extrusion die having an annular extrusion orifice; adapted to receive molten thermoplastic material for extrusion purposes;

(B) an extruder for continuously extruding molten thermoplastic material from the die to form a seamless tube;

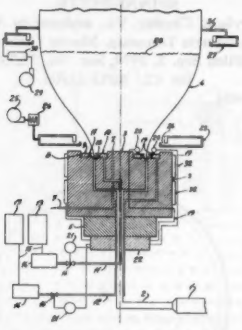
(C) a trough-like reservoir directly located on the face of the extrusion die for holding a pool of molten thermoplastic coating material, said reservoir spanning and fully embodying the annular extrusion orifice and being divided by the seamless tube emerging from said orifice into two concentric portions;

(D) means for feeding molten thermoplastic coating material separately and individually to each of said two portions of the reservoir;

(E) means immediately above the reservoir for blowing a gas

at a controlled temperature and pressure circumferentially around the outer surface of the extruded seamless tube;

(F) means at a distance above the die face for flattening the tube once it has set;



(G) means downstream of said flattening means to withdraw the tube from the die orifice at a controlled speed, and

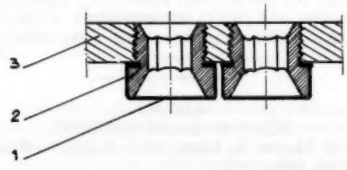
(H) means to introduce a gas at controlled superatmospheric pressure into the tube whereby to inflate it between the points of extrusion and of flattening.

4,248,577

SPINNERET ASSEMBLY

Alain Bory, Lyon, and Jean Pommier, Sainte-Foy-les-Lyon, both of France, assignors to Rhone-Poulenc Textile, Paris, France

Filed Jun. 13, 1978, Ser. No. 915,232
Claims priority, application France, Jun. 14, 1977, 77 18438
Int. Cl.³ B29F *3/04*
U.S. Cl. 425—131.5 **12 Claims**



1. A spinneret assembly comprising thin individual spinnerets simultaneously exhibiting a great mechanical resistance to pressure and a great number of orifices, in which:

the relation between the total pierced area and the total surface of the assembly is between 35% and 90%;

the relation between the total number of orifices and the total surface of the assembly is between 0.2 and 25 orifices per mm^2; and

the relation between the total surface of orifices and the surface of the assembly is between 0.5% and 40%;

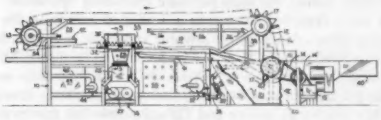
the spinneret assembly comprising a rigid supporting plate pierced with holes designed for the passage of the spinning material, every hole being coaxially associated with an individual spinneret, each hole having at least one portion of its length in which its cross sectional area is smaller than that of the respective spinneret.

4,248,578

CHEESE MOLDING PROCESS AND APPARATUS THEREFOR

Donald G. Worden, Beaver Dam, Wis., assignor to Stainless Steel Fabricating, Inc., Columbus, Wis.

Filed Jun. 21, 1978, Ser. No. 917,776
Int. Cl.³ A01J *25/13*
U.S. Cl. 425—220 **13 Claims**



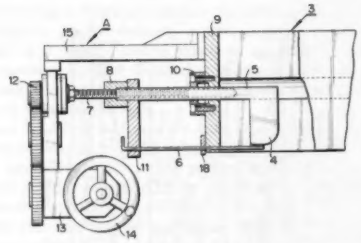
1. An apparatus for molding a cheese piece of a desired shape comprises at least one openable hollow mold of the desired interior shape, means for filling said mold with soft cheese, means for cooling the cheese in the mold to partially harden the cheese, a tank adapted to hold a liquid bath and means for transporting said mold to a location in the tank where the mold is opened to release the partially hardened cheese piece below the surface of the liquid bath so that the fluid pressure of the liquid will prevent the shape of the cheese piece from being distorted.

4,248,579

FILM EXTRUSION DIE

Mokichi Maejima, Tokyo, Japan, assignor to Jyohoku Seiko Co., Ltd., Tokyo, Japan

Filed Oct. 10, 1979, Ser. No. 83,444
Int. Cl.³ B08B *1/00*; B29D *7/04*
U.S. Cl. 425—227 **6 Claims**



1. In a T-shaped extrusion die for extruding films of thermally flowable synthetic resin at a high pressure, comprising (1) a die body having a manifold for containing a supply of the synthetic resin in molten state and a slot-like passage for passing the molten synthetic resin towards a slot-like discharge orifice, (2) adjustable lips for forming the slot-like discharge orifice of any desired size between their lower ends, (3) inner deckles for varying the edge thickness of the resulting extruded film, movable perpendicularly to the resin flow and within the slot-like passage at the end portion of the die body, respectively, and (4) inner deckle rods for regulating the width of the resulting extruded film, movable below the inner deckles in conjunction therewith, parallel to the moving directions of the inner deckles and within the slot-like passage at the end portions of the die body, respectively,

said extrustion die characterized in that one of the inner deckles being securely connected to, and supported by, a support rod extending through the manifold beyond one end of the die body and provided at the outer end with a support rod-power driving device for moving the support rod in sliding contact with the surface of the manifold, the other being securely connected to, and supported by, a similar support rod extending through the manifold be-

yond the other end of the die body and provided at the outer end with a support rod-operating device for moving the other support rod in sliding contact with the surface of the manifold, the support rod-power driving device being manually operable or remote-operable at the side of the support rod-operating device, and the inner deckle and the mating inner deckle rod being kept a predetermined distance away from each other thereby to permit the latter to move easily without being closely contacted with the former during the high-pressure extruding operation.

6. A resin remover for use in a T-shaped extrusion die for extruding films of thermally flowable synthetic resin at a high pressure, comprising (1) a die body having a manifold for containing a supply of the synthetic resin in molten state and a slot-like passage for passing the molten synthetic resin towards a slot-like discharge orifice and (2) adjustable lips for forming the slot-like discharge orifice of any desired size between their lower ends, the resin remover comprising a square rod at least one of the end portions of which is so formed that the cross-section of the end portion is the same as that of the region including the slot-like discharge orifice and the lower end portion of the slot-like passage for the molten resin, a grip attaching to, and surrounding, the central portion of said square rod, and a burn protector secured to, and partly covering, the grip so that the space between the grip and protector is large enough to permit a human hand to hold the grip.

4,248,580

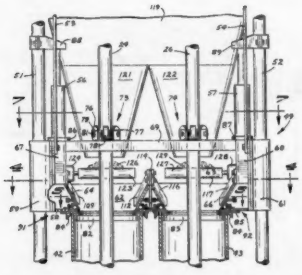
STRUCTURE FOR DIRECTING CONCRETE TO PIPE JACKET

Alfred W. Christian, Woodstock, Canada, assignor to Hydrotile Canada Limited, Woodstock, Canada

Division of Ser. No. 753,526, Dec. 22, 1976, Pat. No. 4,118,165. This application Jun. 30, 1978, Ser. No. 920,817

Int. Cl.³ B28B *21/26, 13/02*

U.S. Cl. 425—262 **16 Claims**



1. A structure for directing concrete into an upright jacket having a chamber to accommodate concrete to make a concrete pipe, said jacket having an open upper end comprising: a platform having an opening adapted to be aligned with the open upper end of the jacket, an annular converging wall feed means having an inner surface surrounding a discharge opening in communication with the opening in the platform, said surface having an upper portion and a lower portion, said lower portion located in the opening in the platform, annular means surrounding the annular converging wall feed means and rotatably mounting the annular converging wall feed means on the platform, drive means for rotating the annular converging wall feed means, wiper blade means located adjacent said inner surface of the annular converging wall feed means, said wiper means extending downwardly from adjacent the upper portion of the surface toward the lower portion thereof for directing concrete from the inner surface to the discharge opening during the rotation of said annular converging wall feed means, and means for holding the wiper blades in a stationary position whereby concrete located on said surface is moved into engagement with the stationary wiper blades and directed by said blades into the chamber of said jacket.

4,248,581

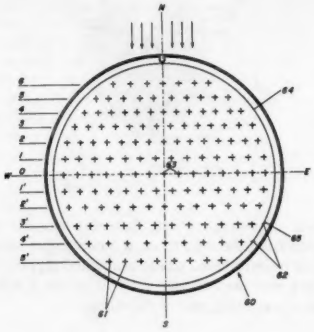
SPINNERETTE

David M. Harrison, Chester, Va., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Sep. 5, 1979, Ser. No. 72,753

Int. Cl.³ A01J *21/00*

U.S. Cl. 425—464 **19 Claims**



1. A spinnerette for use in a process in which one or more ends of individual filaments are extruded from a plurality of orifices of the spinnerette, said orifices for each end being arranged in a pattern which fills a predetermined circular area of the spinnerette, the pattern consisting of at least 5 substantially parallel rows, the orifices being substantially equispaced within a given row, the perpendicular distance between rows going from one side of the pattern to the other progressively increasing per row by an average of about 1 to 10 percent of the orifice spacing on the row closest to a line parallel to the rows and bisecting the pattern, the spacing of orifices per row going in the same direction on an average progressively increasing by from about 1 to 10 percent of said orifice spacing, said orifice spacing ranging from about 0.10 to 0.75 inch (about 0.25 to 1.9 centimeters), said orifices being positioned so that every other row has an orifice positioned at a distance from a line bisecting said pattern perpendicularly to the rows of within 25 to 50 percent of the spacing of the orifices on that row.

4,248,582

BLOW MOLDING MACHINE

Merritt W. Martin, Jr., Saline, Mich., assignor to Roman Machine Co., Milan, Mich.

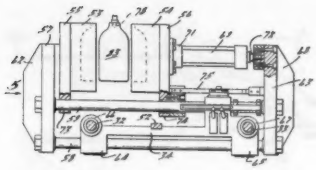
Filed Mar. 20, 1978, Ser. No. 890,625

Int. Cl.³ B29C *17/07*

U.S. Cl. 425—531 **13 Claims**

1. A blow molding machine comprising parison forming means at an extruding station, a blow pin spaced therefrom at a blow molding station, a pair of mold sections movable between clamping and unclamping positions with respect to said parison forming means and blow pin, and also movable transversely between said parison forming means and blow pin, first and second platens supporting said mold sections, means supporting said platens, means for actuating said mold sections between clamping and unclamping positions comprising first and second sets of tie bars secured to and extending from said first platen, said platens extending at least primarily to one side of said tie bars whereby the tie bars pass clear of a parison at said parison forming means and a blown article at the blow pin during movement therebetween, and a reciprocable motor

disposed between said second platen and means secured to the other ends of said tie bars, whereby certain of said tie bars are



in tension and other tie bars are in compression in the clamped position of said mold sections.

4,248,583

BLOW-MOLDING UNIT FOR SYNTHETIC PLASTIC MATERIALS

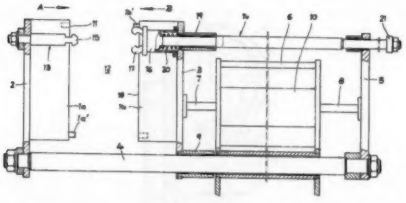
Manfred Hedke; Uve-Volker Roos, both of Bodenteich, and Hermann Reuel, Berlin, all of Fed. Rep. of Germany, assignors to Bekum Maschinenfabrik GmbH, Berlin, Fed. Rep. of Germany

Continuation of Ser. No. 786,814, Apr. 12, 1977, abandoned, which is a continuation of Ser. No. 629,081, Nov. 5, 1975, abandoned. This application Oct. 25, 1978, Ser. No. 954,559

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1974, 7437975[U]

Int. Cl.³ B29C *1/16, 17/07*

U.S. Cl. 425—541 **8 Claims**



1. In a blow-molding unit for blow-molding synthetic plastic objects, a combination comprising a pair of assemblies, each including an upright mold section and a lower part below said mold section; guide means extending through at least one of said lower parts and being operative for guiding said assemblies in substantial parallelism toward and away from each other between a closed position in which said mold sections meet in an upright parting plane and confine a synthetic plastic object between themselves, and an open position in which said mold sections define between themselves a free space and in which free relative movement of said mold sections and of the object in a predetermined direction can occur so that the object is no longer confined between said mold sections; single motion-imparting means coupled with said assemblies located outside said free space above said guide means and operative for moving said assemblies between said open and cosed positions of said mold sections and for producing, when said mold sections are in said closed position thereof, the forces necessary for counteracting the pressure of a blowing medium during the blow-molding of the synthetic plastic object and for actuating clamping means located above said motion-imparting means and operative for biasing said mold sections towards one another when or slightly before said mold sections have arrived at said closed position, said clamping means comprising two cooperating clamping parts each provided on a different one of said assemblies and projecting from the same toward the respective other assembly by a distance which is small enough for said clamping parts not to interfere with said free space and with the relative movement of said mold sections and said object in said direction when said mold sections are in said open position thereof.

4,248,584

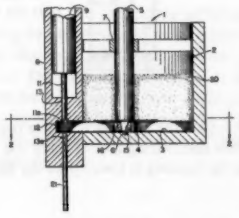
METHOD AND APPARATUS FOR DISPENSING SALT POWDER AS PELLETS IN LAMP MAKING

Elmer G. Fridrich, Chardon, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 834,115, Sep. 19, 1977, Pat. No. 4,170,619. This application Feb. 12, 1979, Ser. No. 11,504

Int. Cl.³ B29C *1/00, 11/00*

U.S. Cl. 425—553 **3 Claims**



1. Apparatus for producing frangible salt sticks made up of bonded segments, each segment comprising a predetermined quantitiy of metal salt, comprising:

a die having a restricted channel therethrough including an entrance portion defining a powder zone, said channel having a length several times its maximum transverse dimension in order to develop frictional resistance at the walls adequate to compress a charge of moldable material as it is forced through,

means for filling said powder zone with a charge of metal salt powder including a receptable for salt powder having a smooth-walled conduit portion communicating with said powder zone, and stirrer means mounted for rotation about a vertical axis within said receptacle for sweeping salt into said powder zone, said stirrer means including sharp-edged blades sweeping through said conduit portion and engaging the walls thereof,

and a smooth-faced plunger movable through said powder zone for compressing said charge of salt powder and bonding it as a frangible segment to a salt stick formed by prior charges of salt forced through said channel.

4,248,585

FLARE IGNITION APPARATUS

Orest P. Marcyniuk, Hamshire, Tex., assignor to Gulf Oil Corporation, Pittsburgh, Pa.

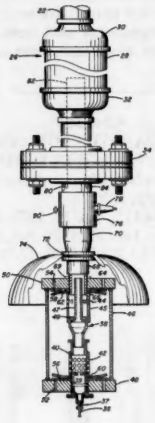
Filed Dec. 4, 1978, Ser. No. 966,251

Int. Cl.³ F23D *13/20*

U.S. Cl. 431—202 **15 Claims**

1. Apparatus for igniting a flare stack comprising a pipe having an upstream end and a downstream end, a fuel gas supply tubing opening into the pipe at the upstream end, orifice means in the pipe adapted to discharge a stream of fuel gas longitudinally in the pipe to form an aspirator, ports in the wall of the pipe, a housing surrounding the pipe, openings through the housing, a conduit connected to the downstream end of the pipe to receive the effluent therefrom and extending to and having an outlet at the discharge end of the flare stack, a sparkplug in the conduit, means for periodically energizing the

sparkplug to ignite fuel in the conduit, and closure means within the housing covering the openings, said closure means being movable from a position over and closing the openings



when pressure within the housing is higher than ambient pressure to a position uncovering and opening the openings when the pressure in the housing is lower than the ambient pressure.

4,248,586

GAS BURNERS

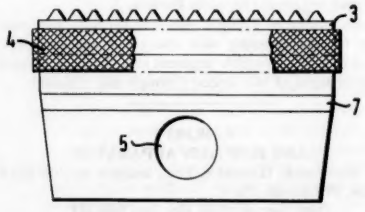
Charles F. Cooper, Worcester, England, assignor to J. Tennant & Sons (Warrington) Limited, England

Filed Nov. 9, 1978, Ser. No. 959,170

Claims priority, application United Kingdom, May 31, 1978, 33344/78

Int. Cl.³ F23D *13/12*

U.S. Cl. 431—328 **2 Claims**



1. A heater comprising a radiant refractory panel for surface combustion of gas and air passing through the panel, mounted as a lid on a casing in the form of an open-topped ceramic box providing for admission of air and combustible gas as such or as a mixture, said mounting being such that the outer circumferential surfaces of said panel and the open-topped ceramic box define between them an outer circumferential side join about the circumference of the heater, wherein the panel is secured by an adhesive-bound glass or other refractory fibre wrapped onto said outer circumferential surfaces to cover and seal the circumferential side join between panel and casing.

4,248,587

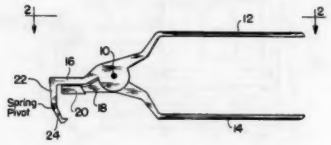
ORTHODONTIC TOOL

Craven H. Kurz, 10921 Wilshire Blvd., Suite 512, Los Angeles, Calif. 90024

Filed Oct. 22, 1979, Ser. No. 86,701

Int. Cl.³ A61C *3/00*

U.S. Cl. 433—4 **5 Claims**



1. A tool for removing an adhesively bonded orthodontic bracket from the surface of a tooth, which comprises: first and second sections pivotally coupled to one another to define first and second handles and first and second jaws for the tool; a head portion formed on one of the jaws in position to engage the top of the tooth; an elongated depending portion positioned on the other of the jaws; and a spring-loaded catch member pivotally coupled to the distal end of said depending portion in position to be spring biased against the bracket with the end of the catch member extending under the edge of the bracket.

4,248,588

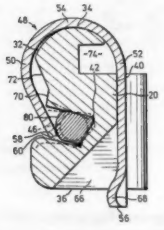
ORTHODONTIC BRACKET AND ARCH WIRE

Gustaf H. Hanson, 33 Woodside Dr., Hamilton, Ontario, Canada (L8T 1C4)

Continuation-in-part of Ser. No. 886,274, Mar. 13, 1978, abandoned. This application Apr. 27, 1979, Ser. No. 34,457

Int. Cl.³ A61C *7/00*

U.S. Cl. 433—11 **16 Claims**



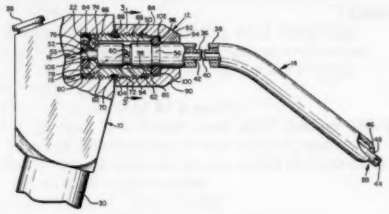
1. An orthodontic bracket comprising a bracket body having lingual, labial, gingival, occlusal, distal and mesial surface portions and a mesial-distal extending arch wire slot opening to the labial surface portion, and a retainer member of resilient material having opposed labial and lingual portions thereof in embracing sliding engagement with corresponding labial and lingual body surface portions, the retainer member being movable on the body between two positions in which the labial side of the slot is respectively open and closed, characterized in that the free end of the retainer member labial portion, extends toward the lingual so that in the slot-closed position it protrudes into the arch wire slot so as to engage an arch wire therein and urge it towards the lingual and occlusal walls of the slot, movement of the retainer member away from the slot-closed position toward the slot-open position taking place against the resilience of the retainer member owing to movement apart of the said opposed portions thereof by the interposed engaged part of the bracket body as the said free end of the protruding labial portion is moved out ot the arch wire slot.

4,248,589

DENTAL SYRINGE WITH QUICK DISCONNECT TIP

John W. Lewis, Newberg, Oreg., assignor to A-DEC, Inc., Newberg, Oreg.

Filed Dec. 29, 1978, Ser. No. 974,366
Int. Cl.[3] A61G *17/02*
U.S. Cl. 433—80 3 Claims



1. In a dental syringe,
a head having a fluid passage therethrough,
a tip having a fluid passage therethrough,
coupling means mounted on the head for releasably holding the tip so that fluid can flow from the passage through the head into the passage through the tip,
the coupling means actuable to permit the tip to be inserted and withdrawn from the coupling means without removing the coupling means from the head and further actuable to prevent the tip from being withdrawn from the coupling means after the tip has been inserted into the coupling means,
means for preventing fluid from escaping from the coupling means other than through the tip,
the coupling means including
a base mounted on the head,
a lock nut screwed over the base,
the base and lock nut defining a bore for removably receiving the rearward portion of the tip,
resilient means positioned between the base and lock nut and surrounding the tip,
the resilient means being adapted to prevent the tip from being withdrawn from the bore when the lock nut is screwed a predetermined amount over the base,
the periphery of the rearward portion of the tip having an annular groove,
the resilient means comprising an elastomeric O-ring which is seated in the groove when the rearward portion of the tip is inserted in the bore,
the base and the lock nut preventing sufficient deformation of the O-ring to permit the tip to be withdrawn from the bore when the lock nut is screwed the predetermined amount over the base so that the tip is positively held against withdrawal from the bore while permitting rotation of the tip without loosening of the lock nut, and so that said O-ring forms a fluid tight seal between the base, lock nut, and tip.

4,248,590

PREPARATION FOR SHRINKPROOFING WOOL

Götz Koerner; Günter Schmidt, and Friedhelm Nickel, all of Essen, Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

Filed Mar. 13, 1979, Ser. No. 20,024

Claims priority, application United Kingdom, Mar. 16, 1978, 10551/78

Int. Cl.[3] D06M *15/66, 3/00, 13/26;* C08L *83/08*

U.S. Cl. 8—128 A 7 Claims

1. A composition for shrinkproofing wool comprising

(a) 1 to 50 wt % of the following organopolysiloxanes:

(aa) 90 to 99.8 mole % of units having the formula $R_n^1SiO_{(4-n)/2}$ in which

90 to 100 mole % of R^1 is methyl,

0 to 10 mole % is longer chain alkyl residues with at most 18 carbon atoms or aryl residues, and

0 to 10 mole % is anionic groups linked through carbon atoms to the silicon atoms;

n has a value of 1.8 to 2.0; and

(ab) 0.2 to 10 mole % of units of the formula $R^2SiO_{3/2}$ in which

R^2 is alkyl, mercapto alkyl, mercapto aryl, hydrogen, $O_{0.5}$, or an anionic group linked through carbon atoms to the silicon atom,

in which up to 10 mole % of oxygen atoms linked to silicon are each replaced by two OR^3 groups, in which R^3 is lower alkyl or hydrogen;

said organopolysiloxanes having at least one anionic group and containing 10 to 50 silicon atoms per anionic group, and

(b) 50 to 99 wt % of water.

4,248,591

INDOANILINES, PROCESS FOR PRODUCING THE SAME AND KERATINIC FIBER DYE COMPOSITION CONTAINING THE SAME

Gregoire Kalopissis, Paris; Andree Bugaut, Boulogne-sur-Seine, and Francoise Estradier, Paris, all of France, assignors to L'Oreal, Paris, France

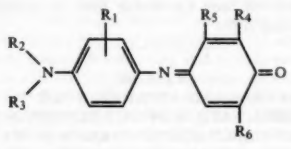
Division of Ser. No. 691,216, May 28, 1976, which is a division of Ser. No. 482,494, Jun. 24, 1974, Pat. No. 3,977,825. This application May 30, 1979, Ser. No. 43,892

Claims priority, application Luxembourg, Jun. 22, 1973, 67859

Int. Cl.[3] A61K *7/13*

U.S. Cl. 132—7 9 Claims

1. A process for dyeing keratinic fibers comprising (1) impregnating said fibers with an effective amount of a dye composition for said keratinic fibers, said dye composition comprising an aqueous or hydroalcoholic solution of an indoaniline of the formula



wherein

R_1 is alkyl, halogen or alkoxy,

R_2 and R_3 are each alkyl,

R_4 is alkyl,

R_5 is hydrogen, and

R_6 is alkyl or acetylamino, or a tautomeric form thereof, the said alkyl and alkoxy groups containing 1-6 carbon atoms and the said indoaniline being present in an amount of 0.0075 to 2 percent by weight of said composition so as to color said fibers, permitting said composition to remain in contact with said fibers for a period of time ranging from about 5 to 30 minutes and rinsing said fibers.

4,248,592

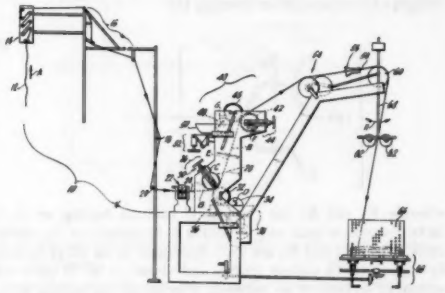
METHOD AND APPARATUS FOR COLORING TOW AND COLORED TOW PRODUCED THEREFROM

Juan Salvans, Circuito Medicos No. 87, Estado De Mexico Ciudad Satelite, Mexico; Carlos Del Cueto, Andes No. 645, Mexico 10, D.F., Mexico, and Fernando L. Del Cueto, Sierra Madre No. 125, Mexico 10, D.F., Mexico

Continuation of Ser. No. 778,932, Mar. 18, 1977, abandoned. This application Feb. 13, 1979, Ser. No. 11,940

Int. Cl.[3] D06P *7/00*

U.S. Cl. 8—485 8 Claims



1. A method for applying a color to continuous synthetic fibers in the form of tow comprising the steps of:

(a) spreading the tow into a flattened sheet;

(b) applying a coloring agent in a first predetermined design pattern to one side of the sheet so as to impregnate the color into the depth of the sheet and then

(c) applying a coloring agent in a second predetermined design pattern to the other side of the sheet so as to impregnate the color into the depth of the sheet from said other side; said first and second design patterns being selected so as to produce intermittent colored and uncolored portions along the length of the fibers.

4,248,593

PROCESS FOR OBTAINING FAST COLORATIONS AND PRINTS ON MATERIALS CONSISTING OF CELLULOSIC FIBERS OR OF BLENDS THEREOF WITH SYNTHETIC FIBERS

Friedrich Reinhardt, Bad Soden am Taunus, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Aug. 10, 1978, Ser. No. 932,617

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1977, 2736563

Int. Cl.[3] D06P *3/84, 3/58*

U.S. Cl. 8—532 13 Claims

1. A process for coloring material comprised of cellulosic fibers which consists essentially of contacting said material with an aqueous alkaline solution of a water-insoluble alkali-soluble dye selected from the group consisting of pigments and disperse dyestuffs for a time sufficient to penetrate, for dyeing purposes, said material, followed by fixation by steaming, dry heat or a combination of steaming and dry heat, to reprecipitate, in a reproducible manner, said dye, and following said fixation, washing said fibers with an aqueous washing liquor containing anionic or non-ionic detergent.

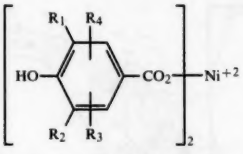
4,248,594

NICKEL SALT-ESTER STABILIZING COMPOSITIONS

Robert J. Tucker, Hackettstown, and Joseph A. Hoffman, Bridgewater, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Feb. 4, 1980, Ser. No. 118,256
Int. Cl.[3] C09B *45/00*; D06P *1/10*
U.S. Cl. 8—583 20 Claims

1. A nickel stabilizer composition for rendering polyolefins dyeable and resistant to degradation by heat and ultraviolet radiation comprising a mixture of about 70 to 90 parts by weight of a compound of formula (I)



(I)

wherein R_1 and R_2 are each alkyl radicals having up to 8 carbon atoms at least one of which is branced on the alpha carbon, and R_3 and R_4 are each hydrogen or an alkyl radical having up to 18 carbon atoms, and about 30 to 10 parts by weight of an ester of an aliphatic or aromatic carboxylic acid, which ester has a boiling point of at least about 250° C.

4,248,595

PROCESS FOR PREPARING SWELLABLE CROSS-LINKED CARBOXYALKYLCELLULOSES, IN THE FORM OF FIBERS, FROM CELLULOSE HYDRATE AND USE THEREOF

Helmut Lask, and Arno Holst, Wiesbaden, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed May 29, 1979, Ser. No. 43,543
Claims priority, application Fed. Rep. of Germany, May 31, 1978, 2823757
Int. Cl.[3] C08G *59/00*; C08B *17/00*
U.S. Cl. 8—116 P 7 Claims

1. A process for preparing swellable cross-linked carboxyalkylcelluloses in the form of fibers, by reacting cellulose, a carboxyalkylating etherifying agent, and a cross-linking agent in an aqueous alkaline medium, comprising effecting alkalizing, etherifying, and cross-linking simultaneously in one reaction step using fibers of cellulose hydrate or fiber-based textile sheet materials which contain these fibers, by contacting (a) said fibers or textile sheet materials which contain these fibers with an ample quantity of an aqueous alkaline reaction mixture, (b) removing part of the reaction mixture from the fibers or the textile sheet materials contacted therewith, so that at least the quantity required for reaction is still present, wherein the molar relationships of the components of said quantity of the reaction mixture range, relative to 1 mole of cellulose, from about 0.7 to 2.1 moles of alkali hydroxide, about 10 to 30 moles of H_2O, about 0.7 to 2 moles of the etherifying agent, and about 0.005 to 0.1 mole of the cross-linking agent, and (c) treating the fibers or the textile sheet materials containing said remainder of the aqueous alkaline reaction mixture with heat energy for the purpose of the actual chemical reaction.

4,248,596

PROCESS FOR THE FELTPROOF FINISHING OF TEXTILES MADE OF KERATIN-CONTAINING FIBERS

Karl Schäfer, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 13, 1979, Ser. No. 66,137
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1978, 2837083
Int. Cl.[3] D06M *15/52, 3/06, 13/46*
U.S. Cl. 8—127.6 10 Claims

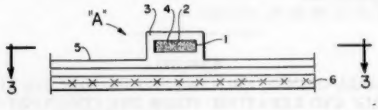
1. A process for the felt free finishing of textiles made of keratin-containing fiber material by means of an aqueous solution of an addition product of a bisulphite and a polyisocyanate, characterized in that (a) in a first stage, the textile material is subjected to a preliminary treatment in a slightly alkaline aqueous long bath which has a textile to treatment ratio greater than 1:8 with from about 0.05 to 2% by weight, based on the weight of the textile, of a compound having a molecular weight of more than about 200 which has at least one cationic group and contains a total of from about 10 to 1,200 milliequivalents of cationic groups per 100 g of solid substance, (b) in a second stage, the pretreated textile material is treated in a slightly alkaline aqueous long bath which has a textile to bath ratio greater than 1:8 with from about 0.25 to 5% by weight, based on the weight of the textile, of an addition product of a bisulphite and a polyisocyanate, and the textile is then rinsed with water, and (c) in a third stage, the textile is dried by a known method and after-treated with steam, the aqueous liquor used in the first and/or second stage containing from about 0.5 to 10 g/l of salts of polyvalent metals.

4,248,597

TIME WATCH OR DEPLETION INDICATOR FOR REMOVABLE SUBSTANCES

Gerald W. McNeely, Arden, N.C., assignor to Akzona Incorporated, Asheville, N.C.

Filed Dec. 12, 1978, Ser. No. 968,871
Int. Cl.[3] G01N *21/06*
U.S. Cl. 23—230 R 30 Claims



1. A device for indicating the depletion of a removable substance by observing a color change, said device comprising:

(a) a permeable film; and

(b) a porous matrix containing a mixture consisting essentially of (1) a predetermined amount of a removable substance (I) containing acidic or basic groups and (II) capable of diffusing through said permeable film (a) and (2) a pH color indicator that undergoes a color change at a predetermined pH range without a chemical reaction with (I) without a broader pH range, said broader pH range bounded by a first pH measurable at said predetermined amount corresponding to when said removable substance commences to diffuse through said permeable film (a) and a second pH measurable after said removable substance has diffused through said permeable film and said color has occurred, said permeable film (a) containing said porous matrix (b).

4,248,598

PROCESS AND APPARATUS FOR THE DETERMINATION OF THE CONTENTS OF ORGANICALLY BOUND CARBON IN WATER CONTAINING ORGANIC SUBSTANCES AND A HIGH CONCENTRATION OF SALTS

Otto H. Blunck, Schrötteringksweg 11, 2000 Hamburg 76, Fed. Rep. of Germany

Filed May 29, 1979, Ser. No. 42,888
Claims priority, application Fed. Rep. of Germany, May 30, 1978, 2823587
Int. Cl.[3] G01N *31/12, 33/18*
U.S. Cl. 23—230 M 9 Claims

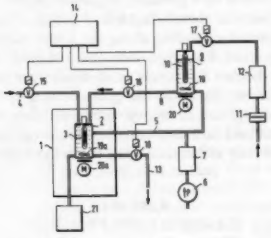
1. In a process for the determination of the content of organically bound carbon in water containing organic substances and a high concentration of salt which comprises exposing a sample of water that is to be analyzed to UV radiation until all of

the carbon contained in the organic substances present in said sample have been oxidized photochemically into CO_2, and quantitatively measuring the amount of CO_2 thus developed, the amount of CO_2 thus developed being a measure of the content of organic substances and thus of the amount of organically bound carbon originally present in the sample water to be analyzed, the improvement which comprises

inserting every sample of water to be analyzed into tap water which is free of carbon and which is essentially free of salt to form a reaction mixture, said tap water having been subjected to an ion exchange treatment to achieve freedom from salt after which an oxygen containing but CO_2-free gas is fed to the salt-free tap water to gas out any inorganically bound carbon present in said salt-free tap water, the tap water which is thus rendered salt free and free of inorganically bound carbon then being subjected to UV radiation until the entire organically bound carbon content which may be contained in said salt free and inorganically bound carbon free tap water is oxidized photochemically into CO_2, said introduced oxygen containing gas serving as a carrier gas to remove gaseous CO_2 developed during UV radiation;

conveying a gas containing oxygen to the resultant reaction mixture, said gas containing oxygen serving as a carrier gas to remove the gaseous CO_2 developed during the UV radiation step and to carry said CO_2 for quantitative CO_2 measurement;

exposing said reaction mixture to UV radiation to cause photochemical oxidation of the entire organically bound



carbon content contained in said organic substances to CO_2; and

removing said reaction mixture and replacing it with another sample of water to be analyzed and portion of tap water and repeating said improvement.

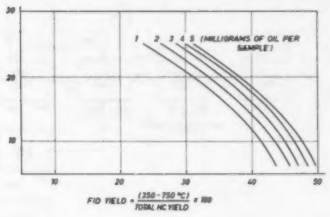
4. In an apparatus for the determination of the content of organically bound carbon in water containing organic substances and a high concentration of salt which comprises a container adapted to receive a sample of water that is to be analyzed and an aqueous reaction medium, means for introducing said water sample and said aqueous reaction medium into said container, means for removing said sample and reaction medium from said container, a UV radiator disposed in said container, means for introducing a gas containing oxygen into said container, means for discharging said introduced gas whereby said CO_2 evolved during UV radiation is carried out of the container to a means for quantitatively measuring the CO_2 evolved during UV radiation, and means for quantitatively measuring the CO_2 evolved during UV radiation, the improvement comprising utilizing tap water as the source of said aqueous reaction medium, said apparatus additionally comprising a purification vessel for the treatment of said tap water prior to its introduction into said container, a UV radiator being disposed in said vessel, an ion exchanger being provided for removing salt from said tap water prior to introduction into said vessel, means associated with said vessel for introducing a gas containing oxygen but free from CO_2 and means for discharging said introduced gas along with CO_2 evolved during UV radiation of the tap water in said vessel.

4,248,599

PROCESS FOR DETERMINING THE API GRAVITY OF OIL BY FID

Pierre R. Mommessin; John R. Castano; John G. Rankin, all of Houston, and Mary L. Weiss, Spring, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Sep. 19, 1979, Ser. No. 77,251
Int. Cl.³ G01N *31/12, 21/72, 9/00*
U.S. Cl. 23—230 HC **4 Claims**



1. A process for determining the API gravity of an oil sample, comprising:

vaporizing volatile and pyrolyzable components of the oil sample;

measuring the ratio of the amount of the hydrocarbons vaporized at temperatures within a relatively high range of temperatures to the total amount vaporized;

noting the API gravity of an oil standard which has a similar chemical composition and which, when a similar amount is tested under substantially the same conditions, yields a substantially equal ratio of amounts of hydrocarbons vaporized; and, said step of noting being accomplished by reference to predetermined data relating said ratio to API gravity for a plurality of said oil standards,

thereby determining the gravity of the oil being tested which approximately equals that which was so-noted.

4,248,600

HIGH SOLIDS AQUEOUS SILICA DISPERSION

Guillermo A. Almagro, Aberdeen, Md., assignor to J. M. Huber Corporation, Locust, N.J.

Filed May 30, 1978, Ser. No. 910,304
Int. Cl.³ B01J *8/10, 13/00*
U.S. Cl. 23—293 R **5 Claims**

1. A process for increasing the bulk density of silica for shipment comprising the steps of:

(a) adding acid to an aqueous silica wet cake slurry to bring the pH to about 1.8 to 4.0;

(b) adding dry, fine particle precipitated silica having a size between three and ten micrometers with an agitator rpm of at least 2000 rpm;

wherein steps (a) and (b) are alternated until a homogeneous consistency is obtained with a solids concentration of above 30%.

4,248,601

PROCESS FOR REDUCING THE SODIUM CHLORIDE CONTENT OF A POTASSIUM SALT

Eugene R. McGough, Carlsbad, N. Mex., and Albert Adams, Oklahoma City, Okla., assignors to Kerr-McGee Chemical Corporation, Oklahoma City, Okla.

Filed Jul. 12, 1979, Ser. No. 57,002
Int. Cl.³ C01D *3/04*
U.S. Cl. 23—293 R **12 Claims**

1. A process for reducing the sodium chloride content of a potassium salt, which comprises:

providing crystalline aggregates of a potassium salt containing in excess of about 0.8 percent by weight of sodium

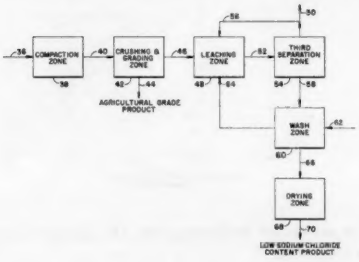
chloride as embedded crystals or entrapped sodium chloride brine;

compacting said crystalline aggregates to produce a cake of uniform thickness;

crushing said cake;

grading said crushed cake to separate crystalline material having a particle diameter greater than about 1.6 millimeters;

introducing the crystalline material having a particle diameter less than about 1.6 millimeters into a leaching zone in



admixture with a brine containing a further quantity of said potassium salt, said brine being less than 50 percent saturated with sodium chloride, to extract the embedded sodium chloride crystals or entrapped sodium chloride brine from said potassium salt crystalline aggregates to provide a crystalline potassium salt product containing less than about 0.35 percent by weight of sodium chloride; and

separating said crystalline potassium salt product from said leaching zone and brine.

4,248,602

PRODUCTION OF PHOSPHORUS PENTASULFIDE OF PREDETERMINED REACTIVITY

Hermann Niermann, Erftstadt; Günter Reichert, Bornheim-Merten; Hans Ebert, Erftstadt, and Friedrich Neumann, Holzwickede, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 15, 1979, Ser. No. 66,871

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1978, 2836502

Int. Cl.³ C01B *25/14*

U.S. Cl. 23—293 R **1 Claim**

1. A process for converting a mixture prepared from starting materials comprised of P_2S_5 of high reactivity and low reactivity, respectively, to phosphorus pentasulfide of predetermined reactivity lying between that of the high reactivity P_2S_5 and that of the low reactivity P_2S_5 starting materials, which comprises: mixing the starting materials in quantitative proportions which are selected in accordance with the respective reactivity of the starting materials and grinding the resulting mixture with the resultant formation of final P_2S_5 of which the reactivity is the higher the higher the proportion of high reactivity P_2S_5 starting material in the mixture, and vice versa.

4,248,603

METHOD AND TANK FOR PRODUCING HOT BRIQUETTES

Heinrich Weber, Recklinghausen; Horst Dungs, Herne; Fritz Ferdinand, Dülmen, all of Fed. Rep. of Germany; Yves Brasseur, Strassen, and Henri Birscheidt, Lintgen, both of Luxembourg, assignors to Firma Carl Still GmbH & Co. KG, Fed. Rep. of Germany and Mecan Arbed S.A.R.L., Luxembourg

Filed Sep. 17, 1979, Ser. No. 76,379

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1978, 2842425

Int. Cl.³ C10L *5/28*

U.S. Cl. 44—10 J **10 Claims**

1. A method for the production of hot briquettes, using a briquetting material of non-caking components, such as low temperature coke from bituminous coal and/or lignite, coke dust and/or oil coke and caking fat coal at temperatures between around 430° C. to 540° C., comprising, delivering the briquetting material to a briquetting press to form briquette blanks, tempering and degassing the blanks by delivering the blanks into individual chambers in a closed system of several side-by-side chambers having gas communication between the chambers so that there is partly changing amounts of gas generated in the individual chambers so as to form the hardened tempered briquettes, and applying an overpressure to the chambers to conduct the gases away from individual chambers together with one and the same overpressure.

7. An apparatus for the production of hot briquettes, comprising, a cube-shaped tank having one corner which is lowermost inclined downwardly in the remainder of the tank, said tank being divided by a plurality of partitions into a plurality of side-by-side narrow chambers, each of which is inclined downwardly, a channel extending along the upper edge of said tank having a separate discharge into each of said chambers for discharging the hot briquettes, said discharges acting also as means for conducting away the gases formed in the chambers during tempering, and an emptying channel disposed along the lower edge of said tank and connected into the interior chambers for receiving and discharging the rehardened tanks.

4,248,604

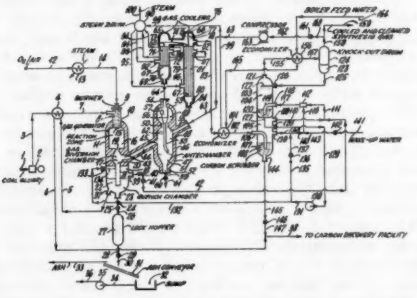
GASIFICATION PROCESS

Paul N. Woldy; Harold C. Kaufman; Michael M. Dach, and James F. Beall, all of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 13, 1979, Ser. No. 57,226

Int. Cl.³ C10J *3/46;* **C10K** *1/02*

U.S. Cl. 48—197 R **15 Claims**



1. A process for the partial oxidation of an ash-containing solid carbonaceous fuel for producing a cooled cleaned product gas stream of synthesis gas, fuel gas or reducing gas and by-product steam comprising:

(1) reacting particles of said solid fuel with a free-oxygen containing gas and with or without a temperature moderator in a down-flow refractory lined gas generator at a

temperature in the range of about 1700° to 3100° F. and a pressure in the range of about 10 to 200 atmospheres to produce a raw gas stream comprising H_2, CO, CO_2, and one or more materials selected from the group consisting of H_2O, H_2S, COS, CH_4, NH_3, N_2, and A, and containing molten slag and/or particulate matter;

(2) passing the gas stream from (1) down through the central outlet in the bottom of the reaction zone and into a thermally insulated diversion chamber provided with a side outlet and a bottom outlet; separating by gravity molten slag and/or particulate matter from said gas stream; passing from about 0 to 20 vol. % of said gas stream as bleed gas along with said separated material through the bottom outlet of said diversion chamber and into a pool of quench water in a quench chamber located below said diversion chamber; and passing the remainder of said gas stream through a side exit passage in said diversion chamber directly through a thermally insulated transfer line and inlet passage of a separate thermally insulated gas-gas quench cooling and solids separation zone at substantially the same temperature and pressure as produced in step (1) less ordinary pressure drop in the lines;

(3) impinging the gas stream from (2) in said gas-gas quench cooling and solids separation zone with a stream of recycle quench gas comprising cooled cleaned and compressed product gas from (7), thereby partially cooling the gas stream from (2) partially solidifying entrained molten slag, and separating from the gas stream a portion of the slag and particulate matter; and passing the partially cooled gas stream up through a separate thermally insulated upper chamber located above and communicating with said gas-gas quench cooling and solids separation zone and removing additional entrained solids from the gas stream;

(4) cooling the gas stream from (3) in a main gas cooling zone and producing by-product steam by passing said gas stream in indirect heat exchange with preheated boiler feed water first upward through the tubes of a vertical high temperature shell-and-straight fire tube gas cooler having refractory lined inlet and outlet sections, one pass on the shell and tube sides and having fixed tube sheets, then passing the gas stream down through the tubes in the first tube-side pass of a vertical low temperature shell-and-straight fire tube gas cooler having two passes on the tube-side and one pass on the shell-side and having fixed tube sheets, and then upward through the tubes in the second tube-side pass of said second gas cooler; and wherein by-product steam is removed from the shell-sides of said first and second gas coolers; and preheating boiler feed water for use in (4) by indirect heat exchange with the gas stream leaving said second gas cooler;

(5) cooling, and scrubbing the gas stream from (4) with water in gas cooling and scrubbing zones producing a carbon-water dispersion;

(6) cooling the gas stream from (5) below the dew point and separating condensed water to produce said cooled, cleaned stream of product gas; and

(7) compressing a portion of said product gas stream from (6) and introducing same into said gas-gas quench cooling and solids separation zone in (3) as said stream of recycle quench gas.

4,248,605

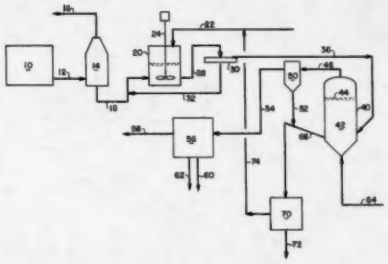
GASIFICATION OF COAL LIQUEFACTION RESIDUES

Michael S. Lancet, Pittsburgh, Pa., assignor to Conoco, Inc., Stamford, Conn.

Filed Jul. 30, 1979, Ser. No. 62,071
Int. Cl.³ C10J *3/54*
U.S. Cl. 48—197 R **6 Claims**

1. A method for gasifying the bottoms fraction from a coal liquefaction process wherein coal is liquified by extraction of said coal by a distillable solvent in the presence of hydrogen under conditions selected to produce a coal liquefaction product, a major portion of which is distillable, said liquefaction product being subjected to vacuum distillation to separate at least a major portion of the distillable fraction of said liquefaction product and at least a major portion of said solvent from said bottoms fraction, said bottoms fraction being flowable at elevated temperatures, said method consisting essentially of

(a) mixing said bottoms fraction with at least one finely-divided calcium compound, said calcium compound being selected from the group consisting of CaO, $CaCO_3$ and



$Ca(OH)_2$ and of a size consist no larger than about −200 Tyler mesh, said calcium compound being added in an amount sufficient to produce agglomerate particles larger than about 100 Tyler mesh upon mixing with said bottoms fraction said amount being greater than about 40 weight percent based on the weight of said bottoms fraction; and

(b) gasifying at least a portion of said agglomerates by reacting said agglomerates with steam in a fluidized bed to produce a hydrogen-rich fuel gas.

4,248,606

SUPPORTED DIAMOND

Harold P. Bovenkerk, Worthington, Ohio, and Robert C. DeVries, Burnt Hills, N.Y., assignors to General Electric Company, Worthington, Ohio

Filed Aug. 23, 1979, Ser. No. 69,205
Int. Cl.³ B24D *3/02*
U.S. Cl. 51—307 **5 Claims**

1. A compact comprising one or more single crystal diamonds, having a largest dimension of at least one millimeter, embedded in a polycrystalline matrix selected from the group consisting of diamond; cubic boron nitride; and silicon and silicon carbide bonded diamond, or mixtures of diamond and cubic boron nitride, wherein single crystal diamond comprises 10–90 volume percent of the compact and wherein there is diamond to diamond crystal bonding between the single crystal diamonds and the matrix when the matrix material includes diamond.

4,248,607

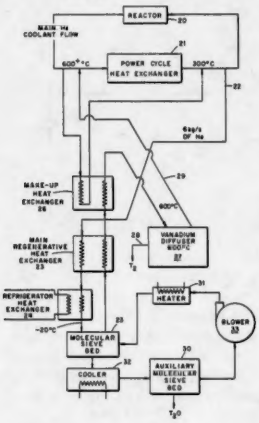
CTR FUEL RECOVERY SYSTEM USING REGENERATION OF A MOLECULAR SIEVE DRYING BED

Charles L. Folkers, Livermore, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation of Ser. No. 730,760, Oct. 8, 1976, abandoned. This application Jun. 20, 1979, Ser. No. 50,240

Int. Cl.[3] B01D *53/04, 53/26*

U.S. Cl. 55—33 8 Claims



1. An improved method for removing tritiated water from a fuel recovery system of a controlled thermonuclear reactor while maintaining same at a partial pressure of water (P_W) not greater than 10^{-8} atmospheres, comprising the steps of: providing the fuel recovery system with a molecular sieve drying bed through which a gas containing tritiated water is circulated to remove a substantial portion of the tritiated water from said gas and regenerating the molecular sieve drying bed; the step of regenerating the bed comprising: circulating a hot inert gas through the molecular sieve drying bed to desorb tritiated water held on the bed, passing the inert gas plus tritiated water vapor through a cooling means where it is cooled to a temperature below about 25° C. (77° F.), directing the thus cooled inert gas plus water vapor through an auxiliary molecular sieve bed which adsorbs the water vapor from the inert gas thereby drying the inert gas, and heating the thus dried inert gas for recirculation thereof through the first-mentioned molecular sieve drying bed.

4. The combination of a fuel-recovery system of a controlled thermonuclear reactor, which utilizes tritiated water and a primary molecular-sieve drying bed, and an apparatus, which regenerates said primary bed and maintains a partial pressure of water (P_W) not greater than 10^{-8} atmospheres in said primary bed; said primary bed being constructed such that a gas containing tritiated water is circulated therethrough and functions to remove a substantial portion of the tritiated water from the gas and constructed to have an inlet and an outlet; said regeneration apparatus including an auxiliary molecular-sieve bed having an inlet and an outlet, a cooler positioned flowwise intermediate said primary bed and said auxiliary bed and flow connected to said outlet of said primary bed and to said inlet of said auxiliary bed, a heater positioned flowwise intermediate said auxiliary bed and said primary bed and flow connected to said outlet of said auxiliary bed and said inlet of said primary bed, and means for circulating a heated inert gas sequentially through said primary bed, said cooler, and said auxiliary bed so that the heated inert gas desorbs tritiated water held on said primary bed creating a moist inert gas which is cooled and passed through said auxiliary bed which adsorbs the tritiated water from the moist inert gas thereby drying the inert gas which is again heated and circulated through said primary bed thus regenerating said primary bed and maintaining therein a partial pressure of water (P_W) no greater than 10^{-8} atmospheres.

4,248,608

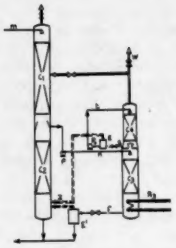
PROCESS FOR PURIFYING LIQUIDS AND/OR REGENERATING ABSORBENT SOLUTIONS

Giuseppe Giammarco, and Paolo Giammarco, both of San Marco 3242, Palazzo Morolin, Venezia, Italy

Filed Apr. 27, 1979, Ser. No. 34,036

Int. Cl.[3] B01D *53/14*

U.S. Cl. 55—43 18 Claims



1. In a process for the purification of liquids and the regeneration of absorbent solutions by treatment with steam in a purification column, to remove gaseous impurities present in said liquids and solutions, the improvement which comprises:

using a purification column comprising a preliminary purification zone, two terminal purification zones, operating respectively at a higher pressure and a lower pressure, and a heat recovery zone;

delivering the liquid or solution to be purified to said initial zone and, at the outlet from the latter, dividing said liquid or solution into two fractions, the first fraction being delivered to the terminal zone at lower pressure and the second fraction being delivered by pumping to the terminal zone at higher pressure;

supplying heat from the outside to the terminal zone at higher pressure to produce steam, extracting from the top of the latter said steam produced by said heat, after its utilization in said terminal zone at higher pressure, together with the gaseous impurities desorbed therein, and delivering said steam to the heat recovery zone operating at said higher pressure, contacting said steam therein with a stream of water or other aqueous liquid, which absorbs said steam and is heated, whereas the gaseous impurities accompanying said steam are discharged to the outside; extracting from said heat recovery zone the water or other aqueous liquid thus heated, and expanding it down to the pressure of the terminal zone at lower pressure, to yield steam practically free from gaseous impurities; delivering the steam thus yielded to the terminal zone at lower pressure, and using it therein for the purification of the liquid or solution delivered to this last zone; and recycling said water or other aqueous liquid to said heat recovery zone;

extracting the liquid or solution purified in said terminal zone at higher pressure at the boiling temperature corresponding to said higher pressure, and expanding it down to the pressure of the terminal zone at lower pressure, and delivering the steam thus evolved to the bottom of said terminal zone at lower pressure, to use if for the purification of the liquid or solution delivered to said terminal zone at lower pressure;

extracting the liquids or solutions purified in said terminal zones of the purification column and sending them for use.

4,248,609

METHOD FOR WET SCRUBBING GASES WITH MELTS

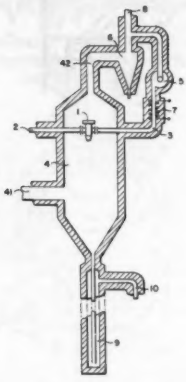
Ekkehard Weber, Amselweg 6, 4300 Essen 17, Fed. Rep. of Germany

Filed Apr. 9, 1979, Ser. No. 28,196

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1978, 2815502

Int. Cl.[3] B01D *47/06*

U.S. Cl. 55—89 2 Claims



1. In a continuous method for wet scrubbing gases containing undesirable constitutents by continuously passing the gases in a vertical scrubbing vessel at an elevated temperature above 500 K in contact with a melt of a metal or an inorganic metal compound which is substantially non-vaporizable under the conditions of operation, to remove the undesirable constituents from the gases and continuously discharging the purified gases, the improvement comprising compressing a portion of the purified gases to increase its pressure above the pressure of the melt and to raise its temperature above the temperature of the melt, introducing the melt prior to contact with the gases into a binary nozzle together with a potion of the purified gases which had been compressed to increase its temperature and pressure as a propellant for the melt through the binary nozzle to atomize the melt, and passing the atomized melt downwardly, countercurrent to and in intimate contact with the upwardly flowing gases to remove the undesirable constituents therefrom and recycling a portion of the thus purified gases as said propellant for the melt through the binary nozzle to atomize the melt.

4,248,610

DUST COLLECTOR WITH PRESSURE-RELIEF OPENING

Heinz Schminke, Egelsbach; Rudolf Krebs, Kronberg; Günter Wendel, Frankfurt am Main; Hans-Jürgen Schmidt, Sulzbach; Willy Desch, Heusenstamm, and Jürgen Nitz, Neu-Isenburg, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 2, 1979, Ser. No. 63,166

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1978, 2834847

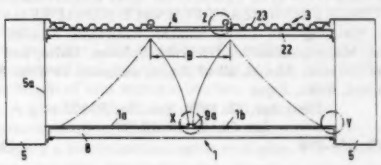
Int. Cl.[3] B03C *3/82*

U.S. Cl. 55—101 15 Claims

1. In a dust-collecting electrostatic precipitator having a housing traversed by a gas in a given direction and a top assembly adapted to forming a pressure relief opening for venting pressure from said housing, the improvement wherein said assembly comprises:

a sealing top sealed to said housing and divided by a plurality of intentional tear lines into fields adapted to be bent upwardly upon the development of an excess pressure in said housing and thereby form at least one pressure relief opening; and

a rain-shielding roof spaced above said top and provided



with a portion having a loosely held elastic cover at least in the region of said at least one opening and deflectible outwardly by a pressure wave emanating from said at least one opening.

4,248,611

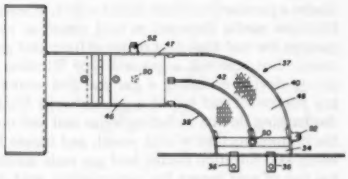
MINING MACHINE

Robert C. McGuire, Dublin, and John J. Belcher, Jr., Columbus, both of Ohio, assignors to Dresser Industries, Inc., Dallas, Tex.

Filed May 10, 1979, Ser. No. 37,965

Int. Cl.[3] B01D *47/06*

U.S. Cl. 55—238 12 Claims



1. An improved apparatus for use on an underground mining machine for cleaning particle-laden gas, comprising:

a duct mounted on the mining machine having an inlet and an outlet;

means for pulling particle-laden gas into the duct and moving it therethrough to the outlet;

a screen disposed in the duct proximate the inlet and adapted to permit the passage downstream of some water droplets having entrained dust particles therein;

means for spraying liquid droplets into the inflowing particle-laden gas just before the gas enters the screen; and

a demister for separating out the liquid droplets and particles from the wetted gas stream, comprising:

(a) flow path means forming at least one curved flow path for causing the wetted gas to change direction;

(b) a liquid collection surface defining the bottom of the demister;

(c) removing means for removing the liquid from the collection surface;

(d) a liquid collection barrier downstream from the curved flow path and defining the downstream end of the liquid collection surface, the barrier extending the width of the flow path; and

(e) a boundary surface spaced above the collection surface and below the uppermost portion of the barrier and extending across at least a greater portion of the width of the duct through the curved flow path for forming upper and lower sections and separating removed liquid and flowing gas, the boundary surface including a plurality of openings for communicating the upper and lower portions so that liquid can gravitate to the lower

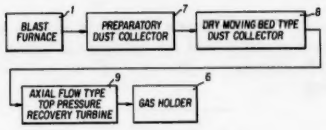
portion and gas can flow through the upper portion with minimal re-intrainment of liquid.

4,248,612

APPARATUS FOR CLEANING AND RECOVERING POWER FROM BLAST FURNACE EXHAUST GAS

Akira Wakabayashi, Kobe; Shoichi Watanabe, Akashi; Koji Sato, Midorigaokanishi; Hiroyuki Kohama, Daito, and Katsumi Sakuma, Akashi, all of Japan, assignors to Kobe Steel, Limited, Kobe, Japan

Filed Apr. 12, 1979, Ser. No. 20,177
Int. Cl.³ B01D *50/00*
U.S. Cl. 55—350 **4 Claims**



1. An apparatus for recovering energy or power from blast furnace exhaust gas, comprising:

means for removing coarse dust of blast furnace exhaust gas;

means for removing fine dust of the gas after said coarse dust removal and communicating with said means for removing coarse dust, said means for removing fine dust comprising a dry moving bed type dust collector which includes a pressure resistant closed vessel, at least one bed of filtration media disposed in said vessel so as to form a passage for said final dust removal from said gas after said coarse dust removal, a gas-seal type filtration media supplying device including a gas seal and connected to the top portion of said vessel, a gas seal type filtration media discharging device including a gas seal and connected to the bottom portion of said vessel, and means for recirculating said filtration media, said gas seals maintaining said gas out of said means for recirculating, said dry moving bed type dust collector being disposed in a preceding stagte to a top pressure recovery turbine; and

means for recovering energy or power from the gas communicating with said means for removing fine dust;

wherein each of said gas seals comprise at least two valves adapted to prevent said gas from leaking out of said vessel and means for alternatively operating said valves during the supply and discharge of said filtration media from said vessel.

4,248,613

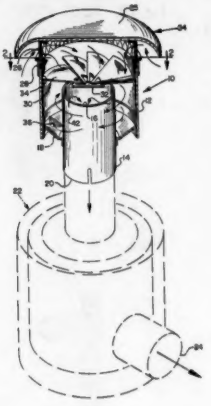
AIR PRECLEANER FOR INTERNAL COMBUSTION ENGINE

Donald E. Linhart, Rte. 2, Box 234, Gresham, Oreg. 97030

Filed Aug. 27, 1979, Ser. No. 70,169
Int. Cl.³ B01D *45/12*
U.S. Cl. 55—394 **1 Claim**

1. In an air precleaner for installation upstream of the air filter on the air intake side of an internal combustion engine, in which the precleaner includes an upright outer cylindrical casing with a top air intake opening, an inner clean air discharge tube centered within said casing and extending into said casing a substantial distance with a clean air discharge opening at the upper end thereof to define an air chamber between the sidewalls of the casing and tube and being spaced below said top intake opening, air spinning means positioned within said casing between said top air intake opening and said clean air discharge opening for imparting a downward centrifugal spinning motion to air entering said casing, whereby dirt-laden air follows a downwardly spiraling path between the sidewalls of the casing and the tube,

the improvement comprising an inverted generally frustoconical bottom wall closure for said casing in surrounding relationship to said discharge tube and a substantial distance below said clean air discharge opening, said bottom wall defining one only generally radially extending slot opening therethrough with the upstream edge of the slot offset below the downstream edge of said slot and said slot discharging to atmosphere, whereby clean air is discharged from said casing centrally through said discharge tube and dirt-laden air is discharged from said casing to atmosphere through said slot,



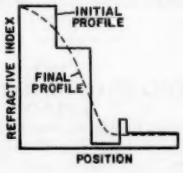
said air chamber within said casing between said bottom wall and said air spinning means being unobstructed so that said downward centrifugal spinning motion within said chamber continues unimpeded to said bottom wall.

4,248,614

METHOD FOR DRAWING HIGH-BANDWIDTH OPTICAL WAVEGUIDES

George W. Scherer, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Continuation of Ser. No. 21,439, Mar. 19, 1979, abandoned. This application Jan. 28, 1980, Ser. No. 115,566
Int. Cl.³ C03C *25/02*
U.S. Cl. 65—3 A **3 Claims**



1. In a method of making a glass optical waveguide or waveguide blank wherein a cladding layer composed of a relatively low refractive index glass is formed around a core member composed of one or more relatively high refractive index glasses by simultaneously drawing the core and cladding glasses from separate reservoirs of molten glass, one or more of the glasses containing a refractive-index-controlling monovalent or divalent metal cation dopant which is capable of migrating between the core member and cladding layer at elevated temperatures, the improvement wherein a glass diffusion layer is provided between the cladding layer and the core member, the glass diffusion layer being initially formed of a molten glass having a lower refractive index than the glass forming the cladding layer but increasing to a refractive index value at least

equivalent to that of the cladding layer in the waveguide as drawn.

4,248,615

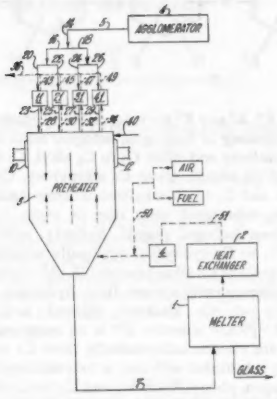
POLLUTION ABATING, ENERGY CONSERVING GLASS MANUFACTURING PROCESS

Stephen Seng, Frazeysburg; Richard K. Henry, Newark; Mark A. Propster, Gahanna, and Charles M. Hohman, Granville, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation-in-part of Ser. No. 31,368, Apr. 19, 1979, abandoned. This application Nov. 19, 1979, Ser. No. 95,870

Int. Cl.³ C03B *3/00*

U.S. Cl. 65—27 **69 Claims**



1. In a glass manufacturing process comprising, combining glass forming batch ingredients and water into free water containing glass batch agglomerates, continuously directly contacting glass batch agglomerates in a vertical bed with flue gases from a glass melting furnace so as to preheat agglomerates, discharging said preheated agglomerates from a lower portion of said bed, charging said preheated agglomerates to said melting furnace and melting said charged agglomerates therein, the improvement wherein said free water containing glass batch agglomerates are hydrologically unstable and further comprising accumulating a predetermined amount of said hydrologically unstable agglomerates in a preconditioning chamber so as to form a preconditioning bed of a predetermined height, directing flue gases from said vertical bed into said preconditioning chamber and passing said gases through said preconditioning bed so as to heat said preconditioning bed of hydrologically unstable agglomerates for a sufficient period of time to form a hydrologically stabilized bed of agglomerates, discharging the agglomerates of said hydrologically stabilized bed and supplying them to said vertical bed.

4,248,616

POLLUTION ABATING, ENERGY CONSERVING GLASS MANUFACTURING APPARATUS

Stephen Seng, Frazeysburg; Richard K. Henry, Newark; Mark A. Propster, Gahanna, and Charles M. Hohman, Granville, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation-in-part of Ser. No. 31,369, Apr. 19, 1979, abandoned. This application Nov. 19, 1979, Ser. No. 95,871

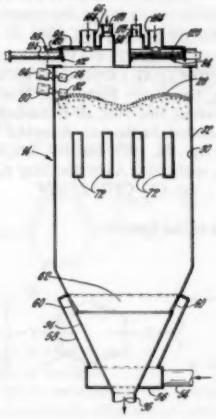
Int. Cl.³ C03B *3/00*

U.S. Cl. 65—335 **44 Claims**

1. In an apparatus for producing molten glass which includes means for forming glass batch into pellets, means for collecting the pellets in a bed, a glass melting furnace, means for supplying hot gases from the furnace through the bed of pellets to heat them, and means for supplying the heated pellets to the furnace, the improvement comprising means for collecting the pellets in at least two separate batches, said means for supplying the hot gases through the bed of pellets also includes means for supplying the hot gases through the batches of pellets after supplying the gases through the bed of pellets, and means for sequentially supplying the pellets of the batches to the bed of pellets and means for supplying the pellets of said separate batches to said bed, the height of said bed being large relative to the height of said separate batches.

32. A glass manufacturing apparatus comprising:

a preconditioning chamber, means cyclically operating to supply a predetermined amount of glass batch agglomerates to said preconditioning chamber, gas permeable means movable in said preconditioning chamber for receiving and supporting said supply of agglomerates in the form of a bed, agglomerate preheating chamber means holding a substantial vertical bed of gravitationally downwardly moving agglomerates, means directing a gaseous heating medium into said preheating chamber and through said vertical bed to preheat said agglomerates, means causing said heating medium after passage through said vertical bed to flow to said preconditioning chamber, through said gas permeable means and said bed supported thereon, cyclically operating means for supplying the agglomerates of said bed supported on said gas permeable means after passage of said heating medium therethrough to said vertical bed, a glass melter, and means supplying preheated agglomerates from said preheating chamber to said melter.



4,248,617

PROCESS FOR PRODUCING GRANULAR BASIC PHOSPHATE FERTILIZER

Seiichi Kamo; Tetzuo Watanabe, and Kiyoshi Nakayama, all of Yokohama, Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Filed Mar. 2, 1979, Ser. No. 16,801

Claims priority, application Japan, Mar. 10, 1978, 53/27346

Int. Cl.³ C05B *11/16*

U.S. Cl. 71—42 **7 Claims**

1. A process for producing a granular basic phosphate fertilizer comprising the steps of providing a basic material which contains at least one member selected from the group consisting of acid-soluble CaO, acid-soluble MgO, and mixtures thereof, said material also comprising acid-soluble SiO_2, and having a content of phosphorus below 2% by weight calcu-

lated as P_2O_5, mixing said material with phosphoric acid and-/or an acidic phosphate in a mixing ratio of

A/MO=0.05 to 0.45

wherein MO is the number of moles of acid-soluble alkaline earth metals in the basic material, calculated as their oxides, and A as the number of moles of phosphoric acid and/or free phosphoric acid dervied from the acidic phosphate calculated as P_2O_5, the mole ratio of said metals to said SiO_2 being 1 to 0.05–2.00, permitting said acid and said material to react in a granulating means, whereby granulation and reaction of the mixture are carried out simultaneously.

4,248,618

DERIVATIVES OF (PYRIMIDYLOXY)PHENOXY-ALKANECARBOXYLIC ACID AND HERBICIDAL COMPOSITIONS THEREOF

Alexander Serban, Doncaster; Richard B. Warner, Ringwood, and Keith G. Watson, Box Hill, all of Australia, assignors to ICI Australia Limited, Melbourne, Australia

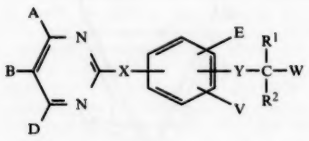
Filed Apr. 24, 1978, Ser. No. 899,395

Claims priority, application Australia, May 6, 1977, PD0012

Int. Cl.³ C07D *239/24*

U.S. Cl. 71—92 **28 Claims**

1. A compound of the formula:



wherein:

A, B and D are independently chosen from the group consisting of hydrogen, halogen, C_1 to C_6 aikyl, C_1 to C_6 haloalkyl, C_1 to C_6 (alkoxy) carbonyl, amino, C_1 to C_6 alkylamino, di(C_1 to C_6 alkyl) amino, cyano, phenyl, phenoxy, halophenyl, halophenoxy, nitrophenyl and nitrophenoxy;

E and V are independently chosen from the group consisting of hydrogen, halogen, nitro, C_1 to C_6 alkyl and C_1 to C_6 haloalkyl;

R^1 and R^2 are independently chosen from hydrogen C_1 to C_6 alkyl;

W is the group

wherein G is chosen from the group consisting of hydroxy, mercapto, C_1 to C_{10} alkoxy, C_1 to C_{10} haloalkoxy, C_1 to C_{10} alkoxy substituted with C_1 to C_6 alkoxy, C_1 to C_{10} alkylthio, C_2 to C_{10} alkenyloxy, C_2 to C_{10} alkenylthio, C_2 to C_{10} alkynyloxy, C_3 to C_7 cycloalkoxy, phenoxy, benzyloxy, nitrophenoxy, halophenoxy, nitrobenzyloxy, halobenzyloxy, phenylthio, benzylthio, amino, C_1 to C_6 alkylamino, di(C_1 to C_6 alkyl)amino, thenylamino, anilino, morpholino and the group OM wherein M is an alkali metal ion or alkaline earth metal ion;

X is chosen from oxygen and sulfur; and

Y is oxygen.

23. A herbicidal composition comprising as active ingredient a compound as defined according to claim **1** and a carrier therefor.

4,248,619

BIS[PYRIMIDYLOXY(THIO)]BENZENE DERIVATIVES

Alexander Serban, Doncaster; Keith G. Watson, Box Hill North, and Richard B. Warner, Ringwood, all of Australia, assignors to ICI Australia Limited, Melbourne, Australia

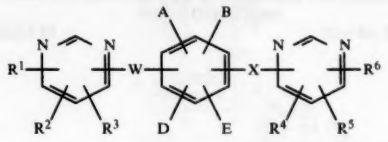
Filed Jul. 23, 1979, Ser. No. 60,634

Claims priority, application Australia, Aug. 8, 1978, PD5409; Aug. 8, 1978, PD5412

Int. Cl.³ A01N *43/54*; C07D *405/12*

U.S. Cl. 71—92 **22 Claims**

11. A compound of formula I:



I

wherein:

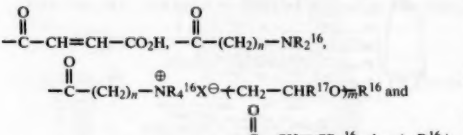
R^1, R^2, R^3, R^4, R^5 and R^6 are independently chosen from the group consisting of hydrogen, halogen, nitro, cyano, thiocyano, carboxy and sulfo; C_1 to C_6 alkyl, C_2 to C_6 alkenyl, C_1 to C_6 alkoxy, C_2 to C_6 alkenyloxy, C_2 to C_6 alkynyloxy and C_1 to C_6 alkylthio wherein each group is optionally substituted with one or more substituents chosen from halogen, phenyl, hydroxy, and C_1 to C_6 alkoxy; C_3 to C_7 cycloalkyl optionally substituted with one or two C_1 to C_4 alkyl groups; NR^7R^8 wherein R^7 and R^8 are independently chosen from hydrogen, C_1 to C_6 alkyl, C_2 to C_6 alkanoyl, phenyl and benzoyl; $NR^9R^{10}R^{11}]\oplus X\ominus$ wherein $X\ominus$ is an anion and R^9, R^{10} and R^{11} are chosen independently from C_1 to C_6 alkyl optionally substituted with one or two substituents chosen from halogen, phenyl, hydroxy and C_1 to C_6 alkoxy, and phenyl optionally substituted with one or two substituents chosen from halogen, C_1 to C_6 alkyl, C_1 to C_6 alkoxy, nitro and cyano; C_1 to C_6-(alkoxy)carbonyl; C_1 to C_6-(alkoxy)-sulfonyl; carbamoyl and sulfamoyl optionally substituted on the amide nitrogen with one or two groups chosen from C_1 to C_6 alkyl and phenyl optionally substituted with one or two substituents chosen from halogen, C_1 to C_6 alkyl, C_1 to C_6 alkoxy, nitro and cyano; and phenyl optionally substituted with one or two substituents chosen from halogen, C_1 to C_6 alkyl, C_1 to C_6 alkoxy, nitro and cyano;

A, B, D and E are independently chosen from the group consisting of hydrogen, halogen, nitro, cyano, thiocyano and sulfo; C_1 to C_{12} alkyl and C_2 to C_6 alkenyl wherein each group is optionally substituted with one or two substituents chosen from halogen, phenyl, hydroxy, C_2 to C_6 alkoxycarbonyl and C_1 to C_6 alkoxy; C_3 to C_7 cycloalkyl optionally substituted with one or two C_1 to C_4 alkyl groups; C_2 to C_6 alkylcarbonyl; NR^7R^8 and $NR^9R^{10}R^{11}]\oplus X\ominus$ wherein R^7, R^8, R^9, R^{10}, R^{11} and $X\ominus$ are as hereinbefore defined; phenyl optionally substituted with one or two substituents chosen from halogen, C_1 to C_6 alkyl, C_1 to C_6 alkoxy, nitro and cyano; carbamoyl and sulfamoyl optionally substituted on the amide nitrogen with one or two groups chosen from C_1 to C_6 alkyl and phenyl optionally substituted with one or two substituents chosen from halogen, C_1 to C_6 alkyl, C_1 to C_6 alkoxy, nitro and cyano; C_1 to C_6 (alkoxy)sulfonyl; a 1,3-butadienylene group wherein two adjacent substituents chosen from A, B, D and E form a bridging group; and the groups YR and

wherein:

Y is chosen from oxygen and sulfur and R is chosen from the

group consisting of hydrogen; C_1 to C_{10} alkyl, C_2 to C_{10} alkenyl and C_2 to C_{10} alkynyl wherein each group is optionally substituted with one or two substituents chosen from halogen, phenyl, hydroxy and C_1 to C_6 alkoxy; C_3 to C_7 cycloalkyl optionally substituted with one or two C_1 to C_4 alkyl groups; C_1 to C_6 alkanoyl; benzoyl optionally substituted on the phenyl ring with one or two substituents chosen from halogen, nitro, cyano, C_1 to C_6 alkyl and C_1 to C_6 alkoxy; phenyl optionally substituted with one or two substituents chosen from halogen, C_1 to C_6 alkyl, C_1 to C_6 alkoxy, nitro and cyano; the cation of an inorganic base such as, for example, an alkali metal ion or an alkaline earth metal ion; the cation of an organic base such as, for example an ammonium ion $NR^{12}R^{13}R^{14}R^{15}]^{\oplus}$ wherein R^{12}, R^{13}, R^{14} and R^{15} are independently chosen from the group hydrogen, C_1 to C_6 alkyl, C_1 to C_6 hydroxyalkyl, phenyl and benzyl; and the groups



hydrogen or a C_1 to C_6 alkyl group, R^{17} is hydrogen or methyl, n is an integer from 2 to 6, m is an integer from 2 to 20 and $X^{\ominus}$ is an anion; and

W and X are independently chosen from oxygen and sulfur.

18. A herbicidal composition comprising as active ingredient a compound of formula I as defined according to claim **11** and a carrier therefor.

4,248,620

FUNGICIDAL AND HERBICIDAL 5-HALOAMINOALKYLIMINO-1,3-IMIDAZOLIDINE-2,4-DIONES

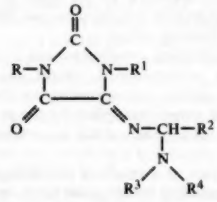
Malcolm S. Singer, Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Oct. 4, 1979, Ser. No. 81,709

Int. Cl.[3] **A01N** *43/50;* **C07D** *401/12, 403/12, 233/96*

U.S. Cl. 71—92 **36 Claims**

1. A compound having the formula



(I)

wherein one of R or R^1 is a lower alkyl; lower alkenyl; lower alkynyl; lower alkoxyalkylene, cyclopentyl, or cyclohexyl and the other is aryl having from 6 to 14 carbon atoms, lower aralkyl or substituted aryl having from 6 to 14 carbon ring atoms and at least one substituent independently selected from the group consisting of fluoro, chloro, bromo, nitro, C_1–C_4 alkyl, trifluoromethyl, cyano, lower alkyl amino, di(lower alkyl)amino, C_1–C_4 alkoxy, provided that said substituted aryl shall have no more than five halo, three nitro, three C_1–C_4 alkyl, two cyano, one alkylamino or di(lower alkyl)amino, or three C_1–C_4 alkoxy substituents;

R^2 is haloalkyl having one or two carbon atoms and from one through five substituents each independently selected from the group of chloro and bromo;

R^3 and R^4 are independently selected from the group of hydrogen and the same group of substituents as defined for R and R^1, provided, however, that only one of R^3 or R^4 can be hydrogen, or R^3 and R^4 together with the nitrogen atom to which they are joined form a piperidinyl or pyrrolidinyl ring.

31. A method of controlling broad leaf vegetation which comprises applying an herbicidally effective amount of the compound of claim **1** to such vegetation.

4,248,621

1-METHYL-3-FORMYL-3-SUBSTITUTED UREAS

Karl Seckinger, Riegel, Fed. Rep. of Germany, and Rudolf Sandmeier, Basel, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

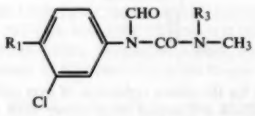
Continuation-in-part of Ser. No. 883,011, Mar. 3, 1978, abandoned, which is a continuation-in-part of Ser. No. 852,819, Nov. 18, 1977, abandoned, which is a continuation of Ser. No. 718,851, Aug. 30, 1976, abandoned. This application Oct. 9, 1979, Ser. No. 82,773

Claims priority, application Switzerland, Sep. 5, 1975, 11591/75; United Kingdom, Jul. 20, 1976, 30117/76

Int. Cl.[3] **A01N** *47/30;* **C07C** *127/00*

U.S. Cl. 71—120 **24 Claims**

1. A compound of the formula:



wherein

R_1 is isopropyl or t-butyl, and

R_3 is hydrogen or methyl.

4. The method of combatting weeds comprising applying to a weed locus a herbicidally effective amount of a compound of claim **1**.

4,248,622

DERIVATIVES OF 9-FLUORENONE AND THE USE THEREOF AS HERBICIDE

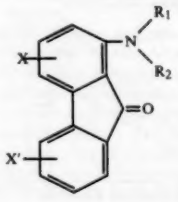
Andre J. Goldblatt, Brussels; Andre J. Gillet, Gembloux, and Luciano Forni, St. Vaast, all of Belgium, assignors to Chimac Societe Anonyme, Brussels, Belgium

Continuation of Ser. No. 898,575, Apr. 21, 1978, abandoned. This application Feb. 5, 1980, Ser. No. 118,711

Int. Cl.[3] **A01N** *33/06*

U.S. Cl. 71—121 **3 Claims**

1. A method for the preemergence control of weeds comprising applying to soil containing weeds a herbicidal effective amount of a derivative of a fluorinated 1-amino-9-fluorenone of the formula:



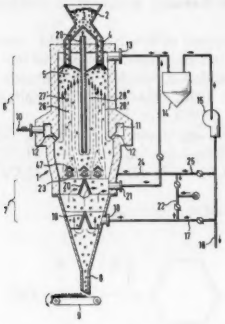
(I)

in which one of the symbols X and X' represents a fluorine atom, whereas the other represents hydrogen, and R_1 and R_2, which may be identical or different, represent hydrogen or a lower alkyl or alkenyl radical.

4,248,623
PROCESS FOR THE DIRECT REDUCTION OF IRON ORES

Gero Papst, Buxtehude; Günther Röpke, Hamburg, both of Fed. Rep. of Germany, and Hans J. Töpfer, deceased, late of Buxtehude, Fed. Rep. of Germany (by Marion Margret Gesine Töpfer nee Block, heir), assignors to Hamburger Stahlwerke GmbH, Hamburg, Fed. Rep. of Germany

Filed Mar. 9, 1979, Ser. No. 18,977
Claims priority, application Fed. Rep. of Germany, Mar. 11, 1978, 2810657
Int. Cl.[3] C21B *13/02*
U.S. Cl. 75—35 17 Claims

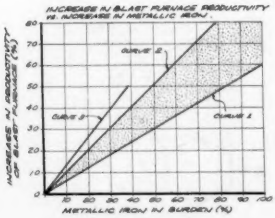


1. A process for the direct reduction of iron ores in a reduction furnace which is charged from above with iron ores, in particular a shaft furnace, wherein hot reduction gas is blown into the reduction zone, wherein at least a part of the waste gas which is taken from the shaft furnace above the reduction zone is returned, after a cleaning or preparing operation and with the addition thereto of hydrocarbons, into the shaft furnace below the zone in which the hot reduction gas is blown into the furnace, characterized in that in the lower portion of the reduction zone (6) the rising waste gas flow (27, 37) which is mixed with hydrocarbons is successively displaced into different regions of the cross-section of the reduction zone by a flow of the hot reduction gas (28, 38), being a flow which varies periodically in direction and/or a flow which varies periodically in strength.

4,248,624
USE OF PREREDUCED ORE IN A BLAST FURNACE

Jorge O. B. Novoa, Garza Garcia, and Julian S. Ramirez, Monterrey, both of Mexico, assignors to Hylsa, S.A., Monterrey, Mexico

Filed Apr. 26, 1979, Ser. No. 33,692
Int. Cl.[3] C21B *5/00*
U.S. Cl. 75—41 6 Claims

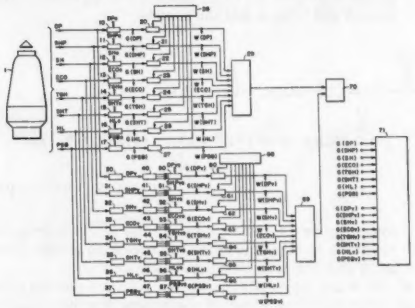

INCREASE IN BLAST FURNACE PRODUCTIVITY VS. INCREASE IN METALLIC IRON
INCREASE IN PRODUCTIVITY OF BLAST FURNACE (%)
METALLIC IRON IN BURDEN (%)
CURVE 2
CURVE 3
CURVE 1

1. In a method for the production of pig iron of a type in which a blast furnace is charged with a mixture of coke, iron ore and prereduced iron ore, the improvement which comprises using a prereduced iron ore having a metallization of 75% to 85% and a carbon content of 1.4 to 4.5 weight percent at least 80% by weight of which is in the form of ferric carbide.

4,248,625
METHOD OF OPERATING A BLAST FURNACE

Sakae Tamura; Kyoji Okabe; Tsuyoshi Fukutake, all of Chiba; Seiji Taguchi, Yotsukaidomachi; Tamotsu Nagai, Chiba; Mitsuo Saino, Chiba, and Tadaaki Iwamura, Ichihara, all of Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan

Continuation-in-part of Ser. No. 845,400, Oct. 25, 1977, abandoned. This application Aug. 6, 1979, Ser. No. 63,969
Int. Cl.[3] C21B *5/00*
U.S. Cl. 75—41 5 Claims



1. A method of operating a blast furnace characterized in that said method comprises the steps of:

detecting from a blast furnace as sample data factors comprising total pressure drop, pressure drop between shaft and furnace top, burden descent, top gas utilization, top gas temperature, shaft wall temperature, thermal state in furnace and input and output balance of iron and slag;

determining from said sample data variable factors corresponding to each of said detective factors;

comparing said sample data for each factor with predetermined limiting values corresponding to the respective factors;

generating a numerical non-dimensional output for each comparison corresponding to the level of satisfaction between the respective sample data and the respective predetermined limiting values;

multiplying the numerical non-dimensional output for each comparison by predetermined weight allocations and generating an output corresponding to the numerical non-dimensional values multiplied by the predetermined weight allocations for each of the numerical non-dimensional outputs;

summing the outputs as a result of the multiplication and generating a numerical factor grand addition output corresponding to the summation of said outputs as a result of said multiplication;

comparing said variable factors with variable factor limiting values corresponding to each of said variable factors;

generating a variable factor numerical non-dimensional output for each comparison corresponding to the level of satisfaction between the variable factors and the corresponding predetermined limiting value;

multiplying each of the variable factor numerical non-dimensional outputs by a predetermined weight allocation;

multiplying each of the variable factor numerical non-dimensional outputs by a predetermined weight allocation;

summing each of the variable factors numerical non-dimensional outputs which have been multiplied by a corre-

sponding predetermined weight allocation to form a variable factor grand addition output;

summing both the numerical factor grand addition output and the variable factor grand addition output to form an overall grand addition output indicative of the operation of the blast furnace; and

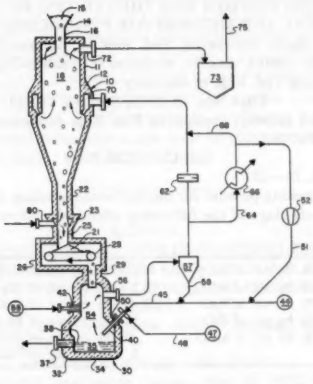
taking appropriate action to control the operating condition of the blast furnace based on the value of the overall grand addition, numerical factor grand addition, variable factors grand addition and the numerical non-dimensional outputs as a result of the comparisons for both the sample data and the variable factors.

4,248,626

METHOD FOR PRODUCING MOLTEN IRON FROM IRON OXIDE WITH COAL AND OXYGEN

John C. Scarlett, Toledo, Ohio, and Charles W. Sanzenbacher, Charlotte, N.C., assignors to Midrex Corporation, Charlotte, N.C.

Filed Jul. 16, 1979, Ser. No. 57,933
Int. Cl.³ C21B *13/06*
U.S. Cl. 75—38 **6 Claims**



1. A method for reducing particulate iron oxide and producing molten iron, comprising:

a. impinging fossil fuel and oxygen onto the surface of a molten iron bath to melt the iron and to gasify the fossil fuel to form a hot off gas within a chamber;

b. humidifying and partially cooling the hot off gas within said chamber to form a hot reducing gas;

c. withdrawing said hot reducing gas from said chamber and introducing the hot reducing gas into an iron-oxide containing shaft type furnace as reductant to directly reduce particulate iron oxide to a hot, highly metallized, particulate iron product; and

d. discharging the hot, highly metallized, particulate iron product into said chamber to be melted and form the molten iron bath.

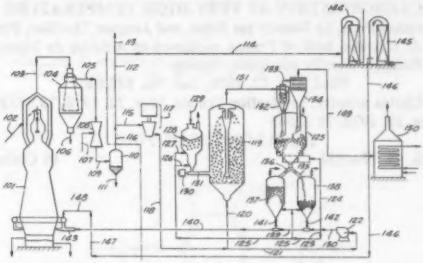
4,248,627

PROCESS FOR THE MANUFACTURE AND USE OF HIGH PURITY CARBONACEOUS REDUCTANT FROM CARBON MONOXIDE-CONTAINING GAS MIXTURES

Jack L. Blumenthal; Maksymilian Burk, both of Los Angeles, and Neal A. Richardson, Rancho Palos Verdes, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed May 16, 1978, Ser. No. 906,506
Int. Cl.³ C21B *5/02*
U.S. Cl. 75—42 **14 Claims**

1. A process comprising disproportionating at least about 50% of a carbon monoxide feed, at a temperature in the range of about 400° C. to about 600° C. and at a pressure in the range of about 0 to about 100 psig with a metal catalyst to form a substantially ash-free and sulfur-free carbonaceous reductant



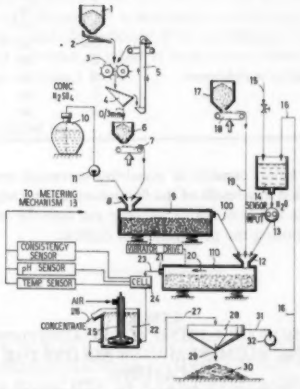
having a carbon-to-hydrogen ratio of at least about 10, and then feeding said carbonaceous reductant to a metal ore treatment process as a fuel.

4,248,628

METHOD FOR LEACHING AND PRECIPITATING METAL VALUES FROM SOLIDS

Mohammed Esna-Ashari, Bergisch-Gladbach, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Jun. 29, 1979, Ser. No. 53,310
Claims priority, application Fed. Rep. of Germany, Jul. 1, 1978, 2829060
Int. Cl.³ C22B *1/00*
U.S. Cl. 75—101 R **9 Claims**



1. A method for leaching and precipitating metal values from a metal bearing solid which comprises:

simultaneously crushing said solid and treating with a concentrated acid in a single operation in a vibratory grinding mill to produce a high solids content pulp which still possesses suitable fluidity,

passing the resulting pulp to a vibratory reactor,

further leaching said pulp in the presence of added water and reacting the same with a cementation medium capable of undergoing an ion exchange with the metal bearing solid to deposit the desired metal as a single operation in said vibratory reactor, and

recovering the desired metal from the effluent of said vibratory reactor.

4,248,629
NICKEL- AND CHROMIUM-BASE ALLOYS POSSESSING VERY-HIGH RESISTANCE TO CARBURIZATION AT VERY-HIGH TEMPERATURE

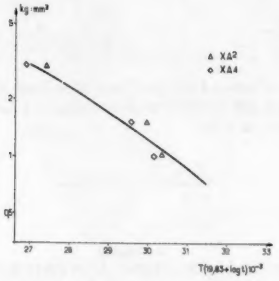
Fernand Pons, Le Manoir sur Seine, and Jacques Thuillier, Pont de L'Arche, both of France, assignors to Acieries du Manoir Pompey, Neuilly sur Seine, France

Filed Aug. 22, 1978, Ser. No. 935,800

Claims priority, application France, Mar. 22, 1978, 78 08338; Jun. 29, 1978, 78 19545

Int. Cl.³ C22C *30/00, 19/05*

U.S. Cl. 75—122 **18 Claims**



1. A nickel-chromium alloy having high mechanical properties, high weldability, high creep strength and resistance to oxidation, and high resistance to carburization, consisting essentially of the following elements in weight percent:

carbon	0.05	to	0.60
nickel	20	to	55
chromium	15	to	40
silicon	0.5	to	2
manganese	0.5	to	2
nitrogen	0.03	to	0.20
niobium	0	to	2
tungsten and/or molybdenum	0	to	5
aluminium	2	to	8
copper	0	to	5
iron	the balance,		

said alloy being capable of acquiring increased resistance to carburization as a result of the formation, during service or by appropriate treatment prior to being put into the service, of a barrier opposing the penetration of carbon.

4,248,630
METHOD OF ADDING ALLOY ADDITIONS IN MELTING ALUMINUM BASE ALLOYS FOR INGOT CASTING

Edward S. Balmuth, Arlington, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 7, 1979, Ser. No. 73,359

Int. Cl.³ C22C *1/03*

U.S. Cl. 75—135 **16 Claims**

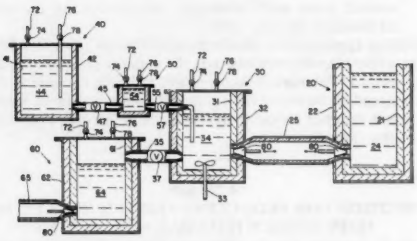
1. The method of making an aluminum alloy containing aluminum and alloying elements including a highly reactive metallic element, comprising:

establishing a bath of molten aluminum;

adding all alloying elements to said bath except said highly reactive metallic element, thereby establishing an alloy melt,

treating said alloy melt to remove hydrogen gases therefrom, and

combining said reactive metallic element with said treated alloy melt,



whereby the addition of said reactive metallic element to said melt after treating said melt ensures minimization of the oxidation rate of the melt.

4,248,631
CASTING POWDER FOR THE CONTINUOUS CASTING OF STEEL AND METHOD FOR PRODUCING THE SAME

Anton More, Burhausen, Fed. Rep. of Germany, and Albert Tosin, Vienna, Austria, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Sep. 10, 1979, Ser. No. 74,223

Claims priority, application Fed. Rep. of Germany, May 2, 1979, 2917763

Int. Cl.³ C22B *9/10*

U.S. Cl. 75—257 **8 Claims**

1. A casting powder for the continuous casting of steel based on silicate slags of the following chemical analysis

25–45% by wt. of SiO_2	20–45% by wt. of CaO
1–16% by wt. of Al_2O_3	0.1–15% by wt. of MgO
0.1–1.5% by wt. of FeO	(20–45.1% by wt. of CaO + MgO)
0.05–10% by wt. of TiO_2	3–15% by wt. of $Na_2O + K_2O$
0.05–10% by wt. of MnO	0–7% by wt. of B_2O_3
	3–10% by wt. of bound F

wherein the powder is pre-melted and foamed, then ground and passed through a sieve to ensure a maximum grain size of 5 mm, whereupon the grains are coated, by means of an adhesive, with a layer of 1.5 to 15% by weight of a member selected from the group consisting of carbon black and graphite and a mixture thereof.

4,248,632
SOLUTION AND PROCESS FOR THE ACTIVATION OF SURFACES FOR METALLIZATION

Hans J. Ehrich; Wolfgang Clauss, and Hartmut Mahlkow, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Continuation of Ser. No. 814,133, Jul. 8, 1977, abandoned, which is a continuation-in-part of Ser. No. 416,735, Nov. 19, 1973, abandoned, which is a continuation of Ser. No. 232,505, Mar. 7, 1972, abandoned. This application Feb. 13, 1979, Ser. No. 11,847

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1971, 2116389

Int. Cl.³ C23C *3/02*

U.S. Cl. 106—1.11 **2 Claims**

1. An activating composition for preparing unactivated surfaces having a base of acrylonitrile-butadiene-styene-polymers, polypropylene, epoxide or glass-fiber-reinforced epoxide for chemical metallization, comprising an aqueous solution having a pH of between about 2.2 and 7 of a compound selected from the group consisting of dichloro-bis-(2-aminopyridine)-palladium-(II) and dichloro-tetrakis-(2-aminopyridine)-palladium-(II), wherein the concentration of

palladium metal in said solution is between about 0.05 and 1 g/l.

4,248,633

UNIVERSAL COPPER-PLATING SOLUTION

Godefridus H. C. Heijnen, and Arian Molenaar, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 852,606, Nov. 18, 1977, abandoned, which is a continuation of Ser. No. 755,434, Dec. 29, 1976, abandoned, which is a continuation of Ser. No. 550,361, Feb. 18, 1975, abandoned. This application Jul. 23, 1979, Ser. No. 59,797
Claims priority, application Netherlands, Feb. 22, 1974, 7402422
Int. Cl.³ C23C *3/02*
U.S. Cl. 106—1.23 **4 Claims**

1. An electroless copper-plating solution consisting essentially of an acidic or neutral aqueous solution of cupric ions, a reducing agent capable of reducing said cupric ions to metallic copper and selected from the group consisting of one of the redox pairs V^{2+}/V^{3+}, Ti^{2+}/Ti^{3+} or Cr^{2+}/Cr^{3+}, a mixture of ascorbic acid and a nitrogen-containing acid acceptor compound capable of neutralizing acid or a mixture of the redox pair Fe^{2+}/Fe^{3+} and at least one water-soluble organic carboxylic acid whose cupric and iron salts are water-soluble and a complexing agent capable of forming a water-soluble cuprous complex with cuprous ions and selected from the group consisting of 2-butyne-1, 3-diol, acetonitrile, pyridinium-3-sulfonic acid, ethylenediamine-tetra-acetic acid ethylenediamine tetramethyl phosphonic acid and ammonia.

4,248,634

PRESERVATIVE SOLUTIONS CONTAINING SODIUM DEHYDROACETATE WITH OR WITHOUT SODIUM BORATE DECAHYDRATE AND/OR DISODIUM EDETATE

John Forester, 2816 Assiniboine Ave., Winnipeg, Manitoba, Canada (R3J 0B1)

Filed May 4, 1979, Ser. No. 36,131
Claims priority, application Canada, May 26, 1978, 304230
Int. Cl.³ C09D *5/14*; A01N *59/14*
U.S. Cl. 106—15.05 **11 Claims**

1. A multi-purpose hypertonic phosphate solution for use in automated cell counters, as a cleaning solution in hemoglobinometry and cleaning solutions used on all types of automated cell counters with a lytic agent concentrate consisting essentially of:

(a) an osmotically balanced solution of sodium chloride, potassium chloride, sodium phosphate dibasic and sodium phosphate monobasic, and:

(b) sodium dehydroacetate, said solution being an aqueous electrolyte solution wherein the sodium dehydroacetate is bacteriostatic in nature.

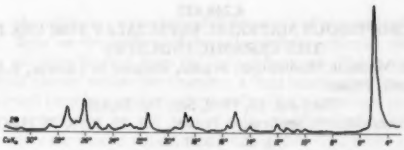
4,248,635

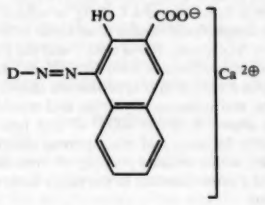
HIGH-HIDING CALCIUM COLOR LAKES HAVING GREAT FULL-SHADE BRILLANCE AND IMPROVED LIGHTFASTNESS

Georg Henning, Ludwigshafen, and Paul Güenthert, Schifferstadt, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

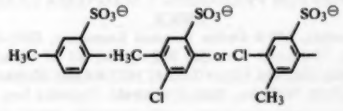
Filed Aug. 9, 1979, Ser. No. 64,983
Int. Cl.³ C09D *1/00*
U.S. Cl. 106—22 **11 Claims**

1. High-hiding calcium color lakes, possessing great full-shade brilliance and improved lightfastness, of the general formula





where D is a radical of the formula



in which

(1) a predominant proportion of primary particles has one or more dimensions greater than 0.3 μm,

(2) the length/width ratio of the predominant proportion of primary particles is not less than 2:1 and for which

(3) the lightfastness of polyethylene containing 0.05% of colorant, and of plasticized PVC containing a 1:10 reduction of colorant, is rated at least 5 on a blue scale with ratings of from 1 to 8.

4,248,636

INK FOR INK-JET PRINTER CONTAINING DICHLOROMETHANE AS AN ORGANIC SOLVENT AND A BASIC DYE AS A COLORING AGENT

Ryusei Sasaki; Yasuki Mori, and Hirosada Morishita, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Continuation-in-part of Ser. No. 822,263, Aug. 5, 1977, abandoned. This application Mar. 6, 1979, Ser. No. 17,896
Claims priority, application Japan, Aug. 9, 1976, 51/93988
Int. Cl.³ C09D *11/08, 11/10, 11/14*
U.S. Cl. 106—23 **23 Claims**

1. An ink for an ink-jet printer which comprises

(a) 100 parts by weight of dichloromethane as an organic solvent, and

(b) 0.2 part by weight or more of a basic dye as a coloring agent,

said ink having a specific resistance of 1 kΩ-cm or less, whereby said ink is adapted for use in an ink-jet printer.

4,248,637

MICROPOROUS MATERIAL ESPECIALLY FOR USE IN THE CERAMIC INDUSTRY

Alain Mathieu, Montelimar, France, assignor to Lafarge, S.A., Paris, France

Filed Jul. 19, 1979, Ser. No. 58,929
Claims priority, application France, Jul. 19, 1978, 78 21461
Int. Cl.[3] C04B *21/00*
U.S. Cl. 106—40 R 10 Claims

1. A casting mould material for the manufacture of sanitary castings comprising a shaped object of microporous material substantially consisting of anorthite on an alumina skeleton, prepared by forming a water slurry of a mixture of an aluminous granulate; a fireclay and a $CaSO_4$, in which mixture the SiO_2 to Al_2O_3 weight/ratio ranges from about 0.05 to about 2.0 and the CaO to Al_2O_3 ratio is less than 1 and the $CaSO_4$ (on an anhydrous basis) constitutes at least 10% of said mixture, casting said slurry in a mould into approximate shape, drying said moulded shape, and subsequently firing said moulded shape at a temperature above or about 1000° C. and below or about 1400° C., thereby forming said microporous material of anorthite on alumina with a volume porosity of from about 40% to about 70%, and a pore diameter in the range from about 0.6 to about 8 microns.

4,248,638

METHOD FOR PREPARING A MAGNESIA CARBON BRICK

Junji Yomota, 640-8 Orida; Fumiaki Kurashina, 2591-40 Komagoe; Mareyasu Kamiide, 540 Orida, all of Shimizushi, Shizuoka-ken, and Ichiro Takita, 1612-4 Oaza Kumade Aza Kurogahata Nishi-ku, Kita Kyushu-shi, Fukuoka-ken, all of Japan

Continuation-in-part of Ser. No. 867,937, Jan. 9, 1978, abandoned. This application Jun. 6, 1979, Ser. No. 46,030
Claims priority, application Japan, Aug. 12, 1977, 52-96124
Int. Cl.[3] C04B *35/04, 35/52*
U.S. Cl. 106—56 13 Claims

1. A method for preparing a magnesia carbon brick comprising the steps of molding into a brick a mixture of magnesia clinker containing at least 90 percent by weight of MgO based on the weight of said magnesia clinker, carbon, a phenolic novolak resin having an average molecular weight of 300 to 600 dissolved in at least one solvent and an amount of a curing agent therefor sufficient to convert the novolak to a thermoset condition, wherein the magnesia clinker and carbon are present in a weight ratio within the range of 70 to 95 parts and 5 to 30 parts, respectively, the phenolic novolak resin solution is at a concentration within the range of 40 to 80 percent by weight, and the amount of the phenolic novolak resin ranges from 2 to 6 percent based on the weight of the mixture of magnesia clinker and carbon, and drying the brick.

4,248,639

METHOD OF CALCINING SINTERABLE MATERIALS TO FORM CEMENT CLINKER OR THE LIKE

Wolfram G. Quittkat, Gauting, Fed. Rep. of Germany, assignor to Babcock Krauss-Maffei Industrieanlagen GmbH, Munich, Fed. Rep. of Germany

Filed Jan. 11, 1979, Ser. No. 2,742
Claims priority, application Fed. Rep. of Germany, Jan. 12, 1978, 2801161
Int. Cl.[3] C04B *7/36*
U.S. Cl. 106—100 5 Claims

1. A method of firing sinterable powder having a carbonate component, comprising the steps of:

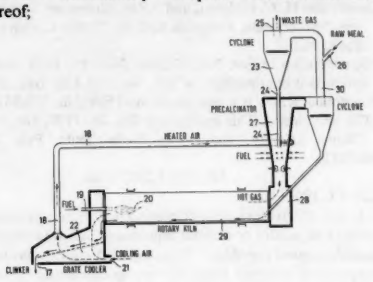
(a) preheating said powder by suspension thereof in a hot gas;

(b) precalcining the preheated powder of step (a) by:

(b_1) forming a turbulent mixture of particles of the powder and said gas substantially in the absence of free oxygen with a substantially vertical axis,

(b_2) spraying fuel laterally into said turbulent mixture thereby dispersing it optimally and depositing said fuel at least in part upon the particles of said powder,

(b_3) while maintaining the turbulence of this mixture laterally adding a stoichiometric quantity of oxygen with respect to said fuel to effect a flameless oxidation of the fuel and heat the particles to a temperature sufficient for substantially complete decarbonatization thereof;



(c) calcining the particles treated in step (b) in a rotary kiln to form clinker;

(d) cooling the clinker formed in step (c) with an oxygen-containing gas thereby heating the oxygen-containing gas; and

(e) feeding at least a portion of the oxygen-containing gas heated in step (d) to step (b_3) to supply the oxygen therefor.

4,248,640

HUMATE UTILIZATION TECHNIQUES

Robert L. Baker, 3201 W. Sixty-Eighth St., Mission Hills, Kans. 66208

Filed Sep. 6, 1979, Ser. No. 73,021
Int. Cl.[3] C04B *7/28*
U.S. Cl. 106—103 7 Claims

1. A method of utilizing humate comprising the steps of extracting humate from its natural form, drying the humate until its moisture content is at a level which permits the humate to be burned, mixing the dried humate with a fuel to obtain a combustible mixture, burning the humate-fuel mixture to obtain an ash residue, and mixing the ash with cement components to obtain a mixture for making cement.

4,248,641

METHOD AND APPARATUS FOR THE PRODUCTION OF CEMENT CLINKERS FROM MOIST AGGLOMERATED RAW MATERIAL

Herbert Deussner, Bergisch-Gladbach, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Division of Ser. No. 912,995, Jun. 6, 1978. This application Jan. 15, 1980, Ser. No. 112,335
Claims priority, application Fed. Rep. of Germany, Jun. 10, 1977, 2726138
Int. Cl.[3] C04B *7/36*
U.S. Cl. 106—100 4 Claims

1. In a method for the production of cement clinker from a raw material containing a sufficient amount of moisture to be agglomerated wherein said raw material is dried in a drying step and subsequently subjected to calcining in a series of steps including preheating, deacidification, sintering and cooling, and wherein the exhaust gases from the calcining step are supplied to the drying step, the improvement which comprises:

pulverizing the raw material from the drying step into a fine powder and

transferring the powder directly into the preheating step without intermediate storage.

4,248,642
WASH CYCLE PROCESS

John Y. Kiyasu, 94 Meadow St., Garden City, N.Y. 11530

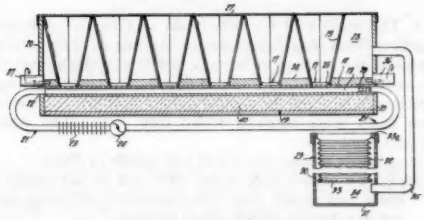
Filed Mar. 8, 1979, Ser. No. 18,817
Int. Cl.[3] B08B 3/08
U.S. Cl. 134—2 9 Claims

1. A programmed in situ wash cycle process procedure for cleaning microbial and enzyme contaminated equipment which comprises sequentially contacting said equipment with at least six chemical agents in the following numerical STEP order: (1) from about 2 to 10 wt. % of a chemical hypochlorite reducing agent, (2) from about 2 to 10 wt. % of a chemical peroxide oxidizing agent, (3) a from about 0.1 to 0.5 N concentration alkaline hydroxide solution, (4) a solution containing from 1 to 5% cetyl pyridinium bromide and from 0.05 to 0.2% cinnamic aldehyde, (5) a from about 10 to 50% polysulfonated alkyl detergent solution and (6) a from about 0.1 to 0.5 N concentration of a cleaning acid solution.

4,248,643
SOLAR ENERGY CONVERSION PANEL

Melville F. Peters, Livingston, N.J., assignor to Walter Todd Peters; Margot Elizabeth Peters; Albert F. Kronman; Arthur H. Steller and Grace B. Steller

Filed Nov. 19, 1979, Ser. No. 95,624
Int. Cl.[3] H01L 31/00
U.S. Cl. 136—248 5 Claims



1. A solar energy conversion panel comprising a hollow support having spaced top and bottom plates and side walls enclosing a chamber between the support, a plurality of hollow hexagonally shaped energy collectors of a generally conical shape disposed with their larger dimensioned ends in closely packed edge to edge relationships, the reduced ends of said collectors being secured to the top plate and extending upwardly therefrom to receive the solar energy, a phtovoltaic cell secured to the top plate and within each of the energy collectors at the reduced end thereof in good thermal contact with said top plate sloped radiant liquid reflecting surfaces on the interior of each of the energy collectors angularly disposed with respect to the photovoltaic cell therein whereby all of the light incident upon the energy collectors will be received upon the photovoltaic cells, the angle of the slope of the light reflecting surfaces of the collectors being disposed in accordance with the formula;

$H=2r \cos 30°/\tan i_s=1.732r/\tan i_s \quad |\tan\psi|=\tan(\pi-\psi)=H/r\,(2\cos 30°-1)=H/0.732r$

Where:

H=height of collector

ψ=the angle between each reflecting surface and the photovoltaic cell.

r=radius of photovoltaic cell i_s=the angle of incidence of the solar ray, whereby a uniform angle of incidence of the light on the surface of the solar cells is achieved after a single reflection from the light reflective surfaces, and;

a fluid carried within the chamber, a fluid bearing line forming a closed loop in communication with said chamber and having an entrance and an exit port in said chamber and means to circulate the fluid in the chamber through the fluid bearing line to remove thermal energy from said chamber for use elsewhere.

4,248,644
EMULSION OF A MELT EXPLOSIVE COMPOSITION

Nigel A. Healy, Edenvale, South Africa, assignor to AECI Limited, Johannesburg, South Africa

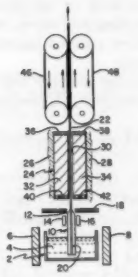
Filed Mar. 26, 1979, Ser. No. 24,084
Claims priority, application South Africa, Apr. 11, 1978, 78/2057
Int. Cl.[3] C06B 45/02
U.S. Cl. 149—21 17 Claims

1. An explosive composition which is in the form of an emulsion of a melt comprising ammonium nitrate in a fuel, the melt forming the discontinuous phase and the fuel forming the continuous phase of the emulsion, the composition including an emulsifying agent which imparts a greasy consistency to the composition, and the composition being substantially water-free.

4,248,645
METHOD FOR REDUCING RESIDUAL STRESSES IN CRYSTALS

David N. Jewett, Harvard, Mass., assignor to Mobil Tyco Solar Energy Corporation, Waltham, Mass.

Division of Ser. No. 761,949, Jan. 24, 1977, Pat. No. 4,158,038.
This application Sep. 5, 1978, Ser. No. 939,808
Int. Cl.[3] C30B 15/34
U.S. Cl. 156—601 7 Claims



1. Method for growing a crystalline body of a selected material from a melt of the same comprising:

(a) establishing a melt/solid growth interface between a seed crystal and a melt which is located at the upper end of a capillary die and is replenished by said die, growing a crystalline body and drawing said growing crystalline body progressively from said interface along a predetermined axis, passing said crystalline body through a cooling zone having a temperature profile determined at least in part by a block of heat-conductive material closely confronting and defining a passageway for said growing body and insulation means surrounding said heat-conductive material for causing conduction to be at the predominant heat flow process at all points along the length of said block of heat conductive material, said block of heat-conductive material having at one end thereof closest to said growth interface a temperature which is below the melting point of said selected material but is at a level above

the maximum temperature at which significant plastic flow cannot occur in said body of selected material, said block of heat-conductive material having at the opposite end thereof furthest from said growth interface a temperature below said maximum temperature;

progressively reducing the temperature of said growing body in said cooling zone in accordance with temperature profile established by said heat-conductive material, and thereafter passing said crystalline body through a secondary cooling zone for reducing its temperature to substantially room temperature.

4,248,646

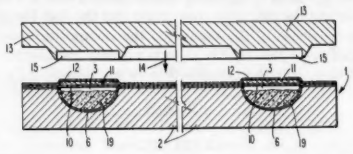
METHOD OF MAKING FOAM FILLED CUSHION TOILET SEAT

Milton Ginsburg, 1201 Sandringham Rd., Bala Cynwyd, Pa.

Division of Ser. No. 903,884, May 8, 1978, abandoned. This application Jun. 27, 1979, Ser. No. 52,339

Int. Cl.³ B32B *31/14, 5/20;* **A47K** *13/02*

U.S. Cl. 156—78 **4 Claims**



1. A method of making of a cushion toilet seat comprising the steps of:

a. vacuum forming an open annular trough in a first soft plastic film material;

b. placing a foamable reaction mixture in said trough and allowing said mixture to expand in said trough to form a foam cushion material;

c. placing a second layer of soft plastic film material over said trough containing said expanding foam cushion material before the foam material has expanded sufficiently to fully fill the trough;

d. laying a stiff annular member over said second layer of soft plastic film material in a position to register with said annular trough;

e. covering said stiff annular member with a third layer of soft plastic film material;

f. heat sealing said first, second and third layers of soft plastic film material together at the inner and outer rims of the annular trough before said expanding foam cushion material has fully filled the trough;

g. tearing away and removing said first, second and third layers of plastic film material within the center region defined by the inner rim of said annular trough; and

h. tearing away and removing the excess material of said first, second and third layer of plastic film material outside the outer rim of said annular trough.

4,248,647

METHOD FOR PRODUCING ACOUSTICAL CEILING TILE FACED WITH A SMOOTH DISTORTION FREE DECORATIVE THIN PLASTIC FILM

Vincent P. Herron, and Jay D. Shenk, both of Lancaster, Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Filed Aug. 7, 1979, Ser. No. 64,569

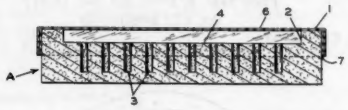
Int. Cl.³ B29C *27/00*

U.S. Cl. 156—84 **4 Claims**

1. A method of forming a decorative acoustical product comprising:

(a) embossing an acoustical base in register to form an embossed picture frame coextensive with the edges of the base and surrounding a recessed area;

(b) stretching a decorative plastic film over the picture frame and adhesively securing the film to the acoustical base; and



(c) subjecting the film faced product to heat to shrink the film and thus stretch the film over the embossed picture frame out of contact with the recessed area to form a distortion free decorative film facing layer.

4,248,648

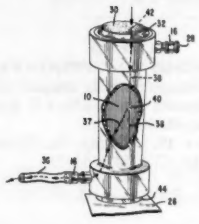
METHOD OF REPAIRING LEAKS IN A HOLLOW CAPILLARY FIBER DIFFUSION DEVICE

Clinton V. Kopp, Barrington, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Jul. 18, 1979, Ser. No. 58,588

Int. Cl.³ B32B *35/00*

U.S. Cl. 156—94 **10 Claims**



1. The method of repairing leaks in a bundle of hollow capillary fibers of a diffusion device, said bundle of fibers being disposed in a housing to define a first flow path through the bores of said fibers, and a second flow path extending through said bundle between the capillary fibers, said first and second flow paths being normally sealed from each other, which method comprises:

temporarily sealing one end of said bundle of fibers;

applying a sealant paste to the other end of said bundle of fibers, said sealant paste being essentially self-supporting and non-flowing except under pressure:

applying a suction to the second flow path, whereby any capillary fibers which have a leak will exert suction from said second flow path to draw said sealant into the bore of said leaking fiber to thereby permanently occlude said leaking fiber.

4,248,649

METHOD FOR PRODUCING A COMPOSITE STRUCTURE

John Harrison, Morley; Frederick Allsopp, Kilburn, and Geoffrey Elliott, Littleover, all of England, assignors to Rolls-Royce Limited, London, England

Filed Jan. 10, 1979, Ser. No. 2,305

Claims priority, application United Kingdom, Jan. 19, 1978, 02141/78

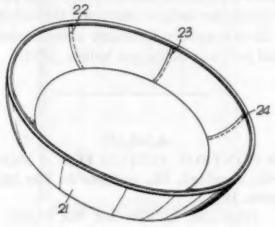
Int. Cl.³ B29D *3/02;* **B29C** *27/26*

U.S. Cl. 156—174 **10 Claims**

1. A method for making a composite structure, comprising:

cutting into sections a pattern of an article having an annular shape and a compound curvature, securing two of said sections back-to-back to make at least one former having plural shaping surfaces, each of which surfaces corresponds to a portion of the surface of said composite struc-

ture, winding at least one filament onto the surface of at least one said former to produce at least one layer of filament to reinforce a curable resin matrix and thereby form at least one filament-reinforced resin layer, dividing said resin layer into at least two preforms and removing the reinforced resin preforms from the at least one former



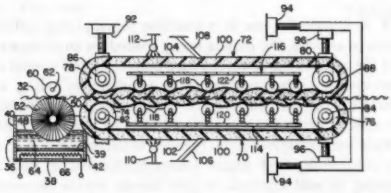
and placing plural such preforms upon the surface of a mold, which surface corresponds to the completed shape of the finished composite structure, covering the surface of the mold, and subsequently exerting pressure upon the reinforced resin layers to consolidate them prior to curing the resin, and curing said resin.

4,248,650

METHOD AND APPARATUS FOR FORMING AN OPEN MESH CRISS-CROSS YARN NET

Ronald P. Murro, Martingale Rd., Amherst, N.H. 03031

Filed Oct. 30, 1978, Ser. No. 955,922
Int. Cl.³ D04H *3/12*
U.S. Cl. 156—181 **12 Claims**



1. In a method of binding an open mesh, unbonded crisscross yarn net into an integral, selfsupporting net product, said method comprising the steps in sequence of:

continuously advancing said net along a path, while maintaining the individual yarns in said net substantially immoveable with respect to one another;

applying an adhesive to said net while continuously advancing said net along said path, said adhesive being applied in liquid form; and

causing said adhesive to set so as to bond said individual yarns together where they overlap, the improvement which comprises passing said advancing net between a pair of endless belts driven synchronously with said advancing net said belts comprising a relatively thin high strength flexible substrate to which is bonded a relatively thick resiliently deformable material, and pressing said belts towards one another so as to engage surfaces on the opposite sides of said advancing net whereby to carry said advancing net along said path for a distance and to maintain said yarns substantially immoveable with respect to one another while said adhesive sets.

6. In apparatus for binding an open-mesh, criss-cross yarn net into an integral, self-supporting net product, said apparatus comprising in combination:

means for continuously advancing an open, pre-formed unbonded criss-cross yarn net along a path;

adhesive supply means mounted along said path, for supplying an adhesive in liquid state onto said advancing yarn net;

and an adhesive setting means mounted along said path, for setting the adhesive on said advancing yarn net;

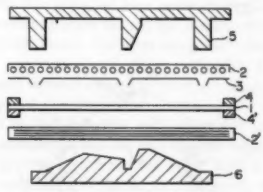
the improvement wherein said adhesive setting means comprises a pair of endless belts, comprising a relatively thin high strength flexible substrate to which is bonded a relatively thick each of said belts resiliently deformable material, said adhesive setting means further including means for driving said endless belts synchronously with said advancing net, and means for pressing said belts towards one another, said belts being adapted to engage surfaces on the opposite sides of said yarn net whereby to sandwich and carry said net for a distance along said path and to maintain the individual yarn of said net substantially immoveable with respect to one another while providing an environment for setting said adhesive.

4,248,651

THERMOFORMING PROCESS OF CORRUGATED PLASTIC BOARD

Susumu Kojimoto; Tadatoshi Ogawa, and Youzou Abe, all of Takatsuki, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Oct. 27, 1976, Ser. No. 736,073
Claims priority, application Japan, Nov. 7, 1975, 50/134349
Int. Cl.³ B29C *17/00, 3/00*
U.S. Cl. 156—198 **7 Claims**



1. An improved thermoforming process for the production of formed articles of corrugated plastic board comprising two sheets and corrugated ribs, parallel ribs or X-pattern ribs therebetween and having small radius curvatures and deep drawings, which comprises heating said corrugated plastic board at the portions to be formed into small radius curvatures or deep drawings more intensively than at the other portions, and applying pressure to said portions thereby crushing the rib structure in said portions without crushing the rib structure in said other portions.

4,248,652

METHOD OF MAKING LEATHERLIKE MATERIALS (A)

Frank P. Civardi, Wayne; Stanley G. Sova, Clifton, and Bohdan V. Burachinsky, Millburn, all of N.J., assignors to Inmont Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 891,833, Mar. 30, 1978, abandoned. This application May 23, 1979, Ser. No. 41,779
Int. Cl.³ B32B *27/40*
U.S. Cl. 156—219 **20 Claims**

1. Process for making artificial leather which comprises

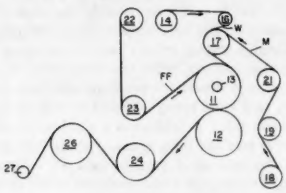
(a) providing a supply of continuous web of fibrous material and a separate supply of continuous sheet of microporous elastomeric polyurethane

(b) continuously pulling said web and sheet lengthwise under tension from said supplies and assembling said web and sheet together in face-to-face relationship under tension

(c) maintaining an adhesive material in heat-softened condition at the interface between said web and said sheet and in adhesive contact with said sheet,

(d) placing a thin preformed skin on the outer surface of said microporous polyurethane, said skin having a surface, in contact with said microporous outer surface, which is heat fusible to said outer surface,

(e) passing the resulting assemblage continuously lengthwise



onto a rotating embossing roll having a hot grain-embossing surface in contact with said skin at a temperature above the temperature at which said skin fuses to said outer surface, and

(f) continuously removing said assemblage lengthwise from said embossing roll.

4,248,653

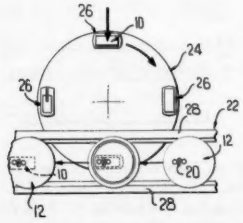
MAGNETIC BONDING OF TABS

Howard L. Gerber, Park Forest, Ill., assignor to The Continental Group, Inc., New York, N.Y.

Filed Aug. 28, 1979, Ser. No. 70,387

Int. Cl.[3] B29C *19/02*; B65B *61/18*; H05B *5/00*

U.S. Cl. 156—272 **14 Claims**



1. An apparatus for simultaneously heating and applying pull tabs to easy opening container units, said apparatus comprising first means for positioning a pull tab and second means for positioning a container unit, said first and second means being cooperable to align a pull tab to be applied with a container unit to receive a pull tab, said second means including a nose piece, a source of high frequency electrical energy of sufficient strength for providing a magnetic field between aligned pull tab and container unit effectively to repel the pull tab from said nose piece against the container unit, and means for coupling said high frequency electrical energy source to said nose piece to supply a pulse of high frequency electrical energy to said nose piece.

4,248,654

SECURING SUBSTRATES TOGETHER WITH MELT ADHESIVES BASED ON POLYAMIDES

Fritz Gude, and Siegfried Brandt, both of Wanne-Eickel, Fed. Rep. of Germany, assignors to Veba-Chemie Aktiengesellschaft, Gelsenkirchen-Buer, Fed. Rep. of Germany

Continuation of Ser. No. 503,538, Sep. 5, 1974, abandoned. This application Feb. 4, 1976, Ser. No. 655,044

Int. Cl.[3] C09J *3/12*

U.S. Cl. 156—331 **5 Claims**

1. In a process for securing two substrates together by disposing between them a melt adhesive in molten condition and fusing said melt adhesive to each substrate, the improvement which comprises employing as the melt adhesive a polyamide copolymer which consists essentially of the polymeric condensation product of adipic acid, dodecamethylene diamine, 2,2,4-trimethylhexamethylene diamine, 2,4,4-trimethylhexamethylene diamine, the diamine mixture consisting of 20 to 80 mol percent of said dodecamethylene diamine and 80 to 20 mol percent of the mixture of 2,2,4- trimethylhexamethylene diamine and 2,4,4-trimethylhexamethylene, said polymer having an average molecular weight (Mn) of 2,000–40,000, the molar ratio of the dicarboxylic acid to any aminocarboxylic acid or lactam in said polymer being not below >9:1.

4,248,655

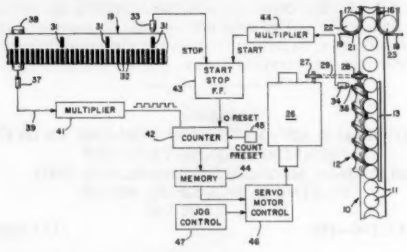
POSITION CONTROL SYSTEM FOR A MOVING WEB

Daniel Kerwin, Lombard, Ill., assignor to The Meyercord Co., Carol Stream, Ill.

Filed Jun. 1, 1979, Ser. No. 44,494

Int. Cl.[3] B32B *31/00*

U.S. Cl. 156—351 **12 Claims**



1. A system for use in a machine for applying indicia to a series of articles, the indicia being spaced on an elongated web and the articles being moved on a conveyor and spaced on said conveyor by spacing means, the machine including a drive means for the web and for the spacing means, the indicia and the articles being fed in associated pairs to a channel where the indicia are transferred from the web to the articles, said apparatus comprising first sensor means responsive to said indicia moving to said channel, second sensor means responsive to said articles moving to said channel, means responsive to said first and second sensor means and determining the length of any time interval between an indicium and an associated article, and control means responsive to the length of said time interval for adjusting the relative positions of said indicia and said articles to obtain registration between the indicium and the article of each pair.

4,248,656

DEVICE FOR MANUFACTURING AN INSULATING GLASS PLATE

Fritz Hofmann, Herzogenbuchsee, Switzerland, assignor to Glasmatec AG, Thun, Switzerland

Filed May 16, 1978, Ser. No. 906,418

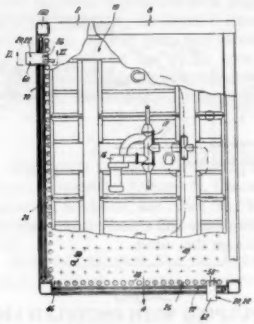
Claims priority, application Switzerland, May 16, 1977, 6079/77

Int. Cl.[3] B30B *15/06, 15/22, 15/30*

U.S. Cl. 156—358 **44 Claims**

1. A device for manufacturing insulating glass plates assembled of at least two superposed glass sheets spaced apart by a spacer frame, comprising a supporting table for supporting a glass sheet in a horizontal plane; a compressing plate mounted for lifting and lowering movement above said supporting table, means for producing a suction effect on the lower surface of said compressing plate, means for measuring the lengths of

adjacent edges of the incoming glass sheet, means for adjusting contact pressure of said compressing plate in response to the



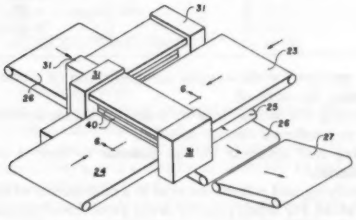
measured lengths, and retractable guiding means arranged at two adjacent sides of said table for guiding a glass sheet.

4,248,657

APPARATUS FOR COVERING PANELS WITH SHEET MATERIAL

Jerry W. Henry, Rocky Face, Ga., assignor to National Service Industries, Inc., Atlanta, Ga.

Filed Aug. 23, 1979, Ser. No. 69,520
Int. Cl.[3] B32B *3/04*
U.S. Cl. 156—443 **7 Claims**



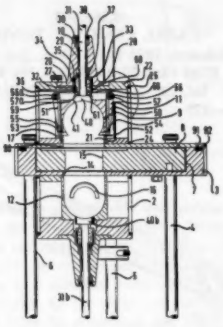
1. In a panel covering apparatus, a panel infeed conveyor, a first pair of panel feed rolls near the discharge end of the infeed conveyor, a free hanging pivotal cross axis weighted folding plate assembly in the path of movement of panels being advanced by said first pair of feed rolls and operable to lift and fold a leading flexible edge portion of panel sheet covering material around the leading edge of the panel and also operable to press such portion of covering material down onto the top face of the moving panel by a dragging action of the free swinging plate assembly over the leading edge of the panel and rearwardly along the top face thereof as the plate assembly swings gradually from a first inclined position to a second inclined position on opposite sides of a vertical plane through the suspension axis of the plate assembly under influence of the moving panel, a stationary brush extending across the movement path of the panel downstream of the plate assembly and having stiff depending bristles operable to press and smooth said leading edge portion and to simultaneously tuck the opposite ends thereof against the side edges of the panel, and a second pair of panel feed rolls downstream from said brush to pull the panel beyond the brush for passage by gravity to a second level of the apparatus for further processing.

4,248,658

APPARATUS FOR THE MANUFACTURE OF BALLS

James N. McGlashen, Winstanley near Wigan, England, assignor to Dunlop Limited, London, England

Division of Ser. No. 800,017, May 24, 1977, Pat. No. 4,154,635, which is a continuation-in-part of Ser. No. 585,667, Jun. 10, 1975, abandoned. This application Mar. 5, 1979, Ser. No. 17,597
Claims priority, application United Kingdom, Jun. 13, 1974, 26341/74; May 28, 1976, 22188/76
Int. Cl.[3] A63B *37/12, 39/08*
U.S. Cl. 156—475 **12 Claims**



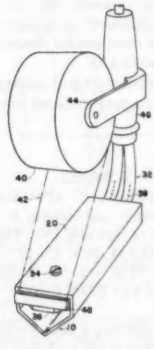
1. Apparatus for applying two undersized cover pieces at right angles to one another around the surface of a resilient ball core, comprising means for stretching said two undersized cover pieces, said means comprising a template which defines a predetermined desired shape of the cover piece, at least two relatively displaceable members having pins to engage a cover piece located in the template and means for separating the displaceable members when the pins thereof engage a common cover piece thereby to stretch the latter until it assumes the shape of the template and means for adhesively applying said cover pieces to said ball core.

4,248,659

ANGULAR ATTACHMENT FOR INSTANTANEOUS SEALING OF CRACKS

John H. Bopst, III, 409 Chalfonte Dr., Baltimore, Md. 21228

Filed Nov. 13, 1979, Ser. No. 93,678
Int. Cl.[3] B44C *7/02*; D06F *75/32*
U.S. Cl. 156—574 **5 Claims**



1. An accessory for a crack sealing system of the type having a rectangular parallelepiped shaped heated soleplate for applying and sealing tape over a wall crack, the accessory comprising means adapting a said crack sealing system for applying

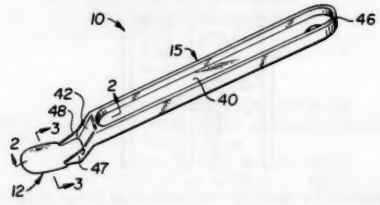
and sealing tape over a said crack when the crack is at the inside corner formed by the junction of two wall panels disposed substantially at right angles and including a sleeve-like member having a pressing and heating bottom which is "V" shaped and downwardly protrusive when positioned beneath a said soleplate, respective parallel sides joined to the pressing and heating bottom, a top joined to the respective sides at right angles, and means for securing the sleeve-like member to a said crack sealing system.

4,248,660

LABEL REMOVAL DEVICE

Herbert E. Johnson, 1023 Phelps Ave., San Jose, Calif. 95117

Filed May 29, 1979, Ser. No. 43,284
Int. Cl.³ A47L *13/08*; B26B *3/00*
U.S. Cl. 156—579 **7 Claims**



7. A device for separating adhesively connected material comprising:

a blade having a first normally downwardly facing flat surface and a second opposed normally upwardly facing generally convex surface, said first and second surfaces coming together at a generally curved periphery, which periphery is continuous and smooth over leading and side portions and includes a transversely extending portion characterized by a first curvature, first and second longitudinally extending portions characterized by a second curvature, and first and second transitional regions characterized by a third curvature that is greater than said first and second curvatures, said first and second surfaces coming together along said periphery at an angle within the range 15° to 30° at all points on said periphery to define a sharp edge; and,

a handle mechanically coupled to said blade, said handle having a gripping portion displaced upwardly from said flat first surface and upwardly inclined therefrom to permit a user to grip said handle gripping portion with a hand without having the hand extend downwardly beyond the plane of said flat surface;

said blade and said handle being of unitary construction and fabricated from a slippery-surfaced plastic material.

4,248,661

LABEL STRIPPING APPARATUS

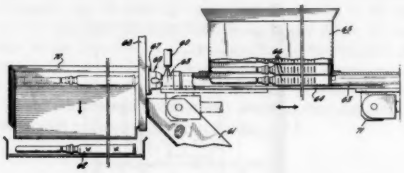
Arnold M. Bleiman, Yeadon, and Gordon A. Russell, Strafford, both of Pa., assignors to Suntech, Inc., Philadelphia, Pa.

Division of Ser. No. 854,924, Nov. 25, 1977. This application Sep. 6, 1979, Ser. No. 73,332
Int. Cl.³ B32B *35/00*
U.S. Cl. 156—584 **7 Claims**

1. An apparatus for removing a label from a vial comprising:

(a) a guide surface which holds a labeled vial adjacent to and in alignment with a collet-cutter;

(b) a collet-cutter having at least two cutting edges, separated by slots of which at least one has at least one of its lengthwise edges outwardly sharpened, which cutting edges are at an angle to an incoming vial and which cutting edges have an internal diameter whereby the label is



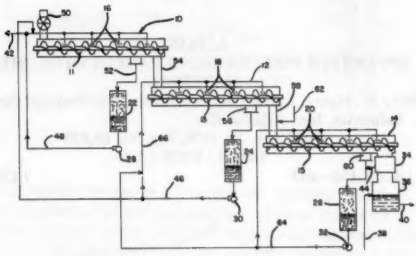
removed completely and cleanly from the vial when vial is forced through the cutter.

4,248,662

OXYGEN PULPING WITH RECYCLED LIQUOR

Scott A. Wallick, Middletown, Ohio, assignor to The Black Clawson Company, Middletown, Ohio

Filed Jan. 22, 1979, Ser. No. 5,354
Int. Cl.³ D21C *3/02*
U.S. Cl. 162—19 **10 Claims**



1. A process for the oxygen delignification of wood chips comprising the steps of:

subjecting the wood chips to steam for a time sufficient to form a softened fibrous material,

refining said softened fibrous material to form a refined material,

delignifying said refined material at a consistency of about 3 to about 8% solids content in the presence of oxygen and an alkali liquor containing sodium tetraborate in a plurality of stages in which a major portion of partially spent alkali liquor from each stage is recycled to the next preceding deliqnification stage.

4,248,663

PULPING WITH AN ALKALINE LIQUOR CONTAINING A CYCLIC KETO COMPOUND AND AN AMINO COMPOUND

George J. Kubes, Dollard-des-Ormeaux; James M. MacLeod, Beaconsfield; Bruce I. Fleming, Pierrefonds, and Henry I. Bolker, Pointe Claire, all of Canada, assignors to Pulp and Paper Research Institute of Canada, Pointe Claire, Canada

Filed Jul. 5, 1978, Ser. No. 922,020
Int. Cl.³ D21C *3/02*
U.S. Cl. 162—72 **10 Claims**

1. In a pulping process for delignifying a lignocellulosic material wherein a cyclic keto compound and a low molecular weight primary diamine which is soluble in the pulping mixture are added to the pulping mixture to improve pulping rates and yields, the improvement which comprises adding to the pulping liquor of an aqueous soda-type alkaline pulping process an amount, between 0.05% and 2% by weight based on the oven-dry weight of the lignocellulosic material, of the

primary diamine which is effective in the presence of the cyclic keto compound either for decreasing the amount of the cyclic keto compound required to provide such improved pulping rate and yield or for improving the physical strength properties of the delignified pulp to kraft pulp-like values but which is ineffective in the absence of the cyclic keto compound to significantly affect any of pulping rate, yield and the physical strength properties of the delignified pulp.

4,248,664

FIBROUS SHEET MATERIALS

Alan W. Atkinson, Rochdale; Richard H. Clucas, Formby; Robert A. Lancaster, Rochdale, and Allen M. Perkins, Hale, all of England, assignors to Turner & Newall Limited, Manchester, England

Filed Jun. 13, 1979, Ser. No. 48,017

Claims priority, application United Kingdom, Jun. 20, 1978, 27339/78

Int. Cl.³ D21H *5/18*

U.S. Cl. 162—145 **8 Claims**

1. In a process for the production of a non-combustible asbestos-free board product comprising a matrix of ball clay reinforced with glassy inorganic fiber, including the steps of:

(i) dewatering on a sieve or other filter medium an aqueous suspension containing glassy inorganic fiber and ball clay as the major ingredients, with a small proportion of starch as binder, and

(ii) subsequently setting the dewatered suspension at elevated temperature, the improvement which consists in:

(a) employing as the aqueous suspension one which has a higher content of ball clay than of glassy inorganic fiber and which also contains organic web-forming fibers, the proportions of the various ingredients by weight of total solids in the suspension being:

unfired ball clay	42–67%
glassy inorganic fiber	18–42%
starch	1.5–5%
organic web-forming fiber	up to 7%

in combination with

(b) limiting the setting at elevated temperature to a drying procedure which is carried out

(b1) until the board product has a tensile strength greater than 2 MPa and a density at least 500 kg/m^3 but less than 1200 kg/m^3, and

(b2) so as to leave the ball clay in the unfired state and the starch content in the range 1.5–5% by weight, to obtain a board product which is remoldable when rewetted with water.

4,248,665

DEVICE AND METHOD FOR RELATIVISTIC ELECTRON BEAM HEATING OF A HIGH-DENSITY PLASMA TO DRIVE FAST LINERS

Lester E. Thode, Los Alamos, N. Mex., assignor to The United States of America as represented by the U.S. Department of Energy, Washington, D.C.

Filed Feb. 5, 1979, Ser. No. 9,703

Int. Cl.³ G21B *1/00*

U.S. Cl. 176—1 **19 Claims**

1. A device for generating energy in the form of radiation and neutrons comprising:

means for generating an annular relativistic electron beam having a voltage of at least 3 MeV and a current density of at least 1 kA/cm^2 and

$$\frac{N}{(1 - v^2/c^2)^{\frac{1}{2}}} \leq 1$$

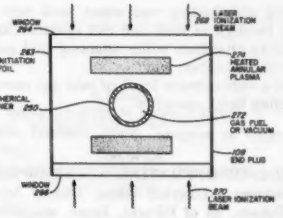
where N is the line density of beam electrons, re is the classical electron radius, v is the beam velocity and c is the speed of light;

a target plasma chamber containing a high-density gas;

a fast liner disposed within said target plasma chamber;

means for ionizing said high-density gas to generate a plasma;

means for initiating convective oscillations in said plasma upon application of said annular relativistic electron beam



such that streaming instabilities are produced in said plasma causing electron beam energy to be deposited in a plasma annulus surrounding said fast liner to heat said plasma annulus to kilovolt temperatures and drive an axial current causing said electron beam energy deposited in said plasma annulus to converge on said fast liner and drive said fast liner to implosion and thereby generate energy in the form of radiation and neutrons.

4,248,666

METHOD OF DETECTING LEAKAGE OF RADIOACTIVE GAS FROM A NUCLEAR FUEL ASSEMBLY

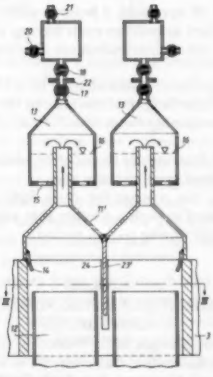
Torsten Olsson, Vesteras, Sweden, assignor to Aktiebolaget Asea-Atom, Sweden

Filed May 5, 1978, Ser. No. 903,301

Claims priority, application Sweden, May 6, 1977, 7705283

Int. Cl.² G21C *17/00*

U.S. Cl. 176—19 LD **11 Claims**



1. A method of detecting leakage of radioactive gas from fuel rod assemblies positioned in a reactor vessel within a supporting core grid, without removal of said fuel rod assemblies from their normal positions within a nuclear reactor core, comprising the steps of:

terminating operation of said nuclear vessel and then removing a cover from said reactor vessel;

exposing said fuel rod assemblies to a pool of water having a predetermined hydrostatic pressure;

positioning a collecting hood assembly adjacent to a vertically upper end of a plurality of said fuel rod assemblies, wherein said collecting hood assembly includes a plurality

of funnel-shaped passageways each having a first end portion aligned with a specific fuel rod assembly and a second end portion in fluid communication with a corresponding chamber;

reducing the depth of water positioned vertically above said fuel rod assemblies to reduce said hydrostatic water pressure;

collecting leaking gas and water within at least one collecting chamber positioned within said collecting hood assembly;

separating and feeding said water back into said pool of water through at least one exit aperture formed in said collecting chamber, while retaining said gas within said collecting chamber; and

testing the radioactivity level of said gas remaining in said collecting hood assembly.

4,248,667

METHOD OF OPERATING NUCLEAR REACTORS

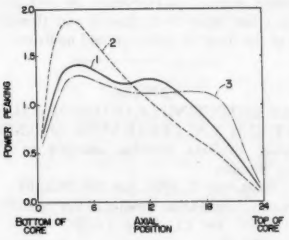
Sadao Uchikawa; Masayuki Izumi; Hiromi Maruyama, and Renzo Takeda, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 25, 1978, Ser. No. 936,922

Claims priority, application Japan, Aug. 26, 1977, 52-101558

Int. Cl.[3] G21C *7/08*

U.S. Cl. 176—24 **4 Claims**



1. A method of operating a boiling-water reactor having a core in which fuel assemblies each having an axially substantially flattened power distribution are disposed, comprising the steps of:

(a) inserting predetermined control rods to a depth of 16/24 to 21/24 of the height of the core in the central region of the core accounting for at least 50% of the entire region of the core;

(b) fully withdrawing all the control rods surrounding said predetermined control rods; and

(c) operating the reactor for over 50% of the operating period thereof in such a manner that said steps (a) and (b) are practiced during such a period.

4,248,668

STORAGE MODULE FOR NUCLEAR FUEL ASSEMBLIES

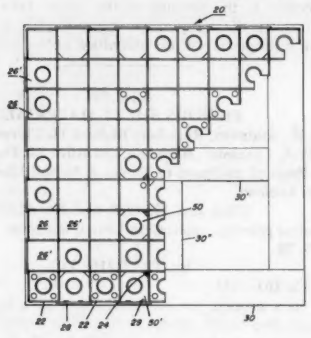
Robert C. Dixon, Morgan Hill; Walter A. Graf, Jr., Saratoga, and David R. Sponseller, San Jose, all of Calif., assignors to General Electric Company, San Jose, Calif.

Filed Mar. 13, 1978, Ser. No. 886,154

Int. Cl.[2] G21C *19/20*; G21F *5/00*

U.S. Cl. 176—30 **10 Claims**

1. A storage module for storage of nuclear fuel assemblies in a liquid pool comprising the combination of: an array of tubes of generally rectangular cross section arranged in a checkerboard pattern leaving gaps between tubes at the periphery of said array, adjacent ones of said tubes being attached to one another along their adjacent corners, each of said tubes including a respective individual base portion separate from the base portions of any other of the tubes providing for liquid flow therethrough and for support of a fuel assembly therein, each of said tubes having a composite portion attached to and extending upward from said base portion and including a layer of neutron absorbing material sandwiched between inner and outer walls thereof; respective individual fuel assembly support plates positioned in spaces not occupied by said tubes and supported by base portions of adjacent ones of said tubes; and closure plates attached between peripheral ones of said tubes to span said gaps.



4,248,669

PROCESS FOR MAKING METALLURGICAL COKE USING FLUIDIZER CHAR

Frank W. Theodore, Pittsburgh; George E. Wasson, Eighty-Four; William A. Jasulaitis, Bridgeville, all of Pa., and Everett Gorin, San Rafael, Calif., assignors to Continental Oil Company, Stamford, Conn.

Continuation-in-part of Ser. No. 764,629, Feb. 1, 1977, abandoned. This application Aug. 21, 1978, Ser. No. 934,750

Int. Cl.[3] C10B *45/02, 53/08, 55/02, 57/04*

U.S. Cl. 201—6 **9 Claims**

1. In a process of making coke from a non-caking or weakly caking coal wherein a mixture in proper proportions of carbonaceous solids and carbonaceous binder derived from said coal by solvent extraction thereof is used as part or all of the feed to a coke oven, the improvement which comprises

the use of fluidizer char produced by the low temperature carbonization of coal in a fluidized bed as said carbonaceous solids,

thereby producing a coke product upon shattering which is predominantly in the size range from about 0.5 to about 4.0 inches.

4,248,670

DEVICE FOR PRODUCING ABRASION-PROOF COKE FORMS

Kurt Lorenz, Hattingen, and Horst Dungs, Herne, both of Fed. Rep. of Germany, assignors to Firma Carl Still GmbH & Co. KG, Fed. Rep. of Germany

Filed Apr. 23, 1979, Ser. No. 32,247

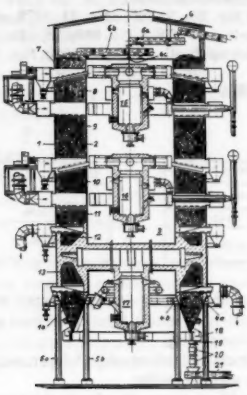
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1978, 2818419

Int. Cl.[3] C10B *49/06*

U.S. Cl. 202—99 **26 Claims**

1. A device for producing abrasion-proof coke forms from bituminous or brown coal briquettes, charcoal or peat, comprising, a preheating stage having a preheating section, a preheating gas circuit for supplying gas to said preheating section and a heater in said preheating gas circuit; a dehydrating stage associated with said preheating stage, having a dehydrating section, a dehydrating gas circuit for supplying gas to said dehydrating section and a heater in said dehydrating gas circuit; a carbonization stage associated with said dehydrating

stage, having a carbonization section, a carbonization gas circuit for supplying gas to said carbonization section and a heater in said carbonization gas circuit; a cooling stage associated with said carbonization stage, having a cooling section and a cooling gas circuit for supplying gas to said cooling section; said preheating; dehydrating, carbonization and cooling sections being stacked to form a tower furnace; and an inner circular cross-sectioned jacket and an outer circular cross-sectioned jacket defining an annular space therebetween forming each of said sections with a shaft space defined in said inner circular cross-sectioned jacket, said heaters of said preheating and dehydrating stage disposed in said shaft space.

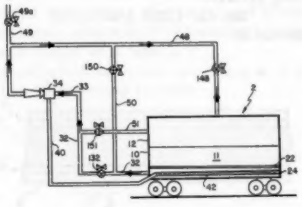


4,248,671

DRY COKE QUENCHING AND POLLUTION CONTROL

John Belding, Branford, Conn., assignor to Envirotech Corporation, Menlo Park, Calif.

Filed Apr. 4, 1979, Ser. No. 27,190
Int. Cl.[3] C10B *39/02, 39/14*
U.S. Cl. 202—228 **6 Claims**



1. A mobile coke quenching apparatus for dry cooling hot coke while simultaneously substantially eliminating pollutants emitted during coke pushing and quenching operations comprising:

a. a mobile coke quench car having a coke receiving box mounted thereon for receiving hot coke and also having hood means mounted above said coke receiving box, said hood means including means for opening said hood to allow hot coke to be pushed into said receiving box and for closing said hood immediately thereafter to prevent the intrusion of air into said receiving box;

b. gas recirculation means connected at one of its ends to the bottom of said coke receiving box and at its other end to said hood means for recirculating gases through the interior of said receiving box;

c. draft inducing means mounted in said recirculation means for drawing gases from the interior of said receiving box downwardly through the hot coke contained in said receiving box to oxidize pollutants contained in said gases and hence, to produce an inert gas;

d. heat exchange means mounted in said recirculation means for removing heat from said inert gas; and

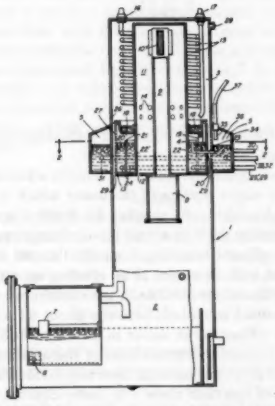
e. exhaust valve means for maintaining a substantially constant gas pressure within said quench car.

4,248,672

DISTILLATION APPARATUS

Verity C. Smith, Dedham, Mass., assignor to Vaponics Inc., Plymouth, Mass.

Filed Aug. 13, 1979, Ser. No. 66,048
Int. Cl.[3] B01D *3/02*
U.S. Cl. 203—11 **2 Claims**



1. A method for distilling a liquid in a distillation apparatus comprising a primary still, a condenser, a main reboiler and at least one auxiliary reboiler, said method comprising:

(a) vaporizing the liquid in the primary still and passing the vapors through a cooling zone containing the condenser thereby condensing a portion of the vapors and venting the uncondensed vapors out of the apparatus through a first vent provided in the cooling zone;

(b) collecting the condensate from (a) in the main reboiler and heating said condensate to boil the condensate and to expel volatile impurities;

(c) passing the vapors from (b) through said cooling zone, thus recondensing a portion, and passing the uncondensed vapors from (b) out through said first vent;

(d) collecting the recondensed vapors from (c) and returning the condensate to the main reboiler to undergo an additional cycle of reboiling;

(e) passing condensate from the main reboiler into a zone isolated and sealed from the atmosphere of the vapor space within the primary still and main reboiler;

(f) boiling the condensate within said isolated zone to vaporize impurities, leaving a purified liquid phase;

(g) venting impurities vaporized in (f) directly to atmosphere and countercurrently to the flow of said condensate into said isolated zone and through a second vent provided in said isolated zone; and

(h) recovering the purified liquid phase from said isolated zone.

4,248,673

PROCESS FOR OBTAINING COLORLESS AND STABLE ISOPHORONE

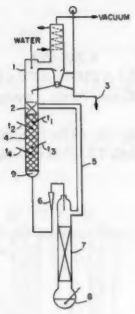
Bernard Cheminal, La Chambre, and Paul Kiener, St. Genis Laval, both of France, assignors to Produits Chimiques Ugine Kuhlmann, Courevoie, France

Filed Jan. 30, 1979, Ser. No. 7,695

Claims priority, application France, Feb. 7, 1978, 78 03352; Dec. 8, 1978, 78 34579

Int. Cl.[3] B01D *3/34*

U.S. Cl. 203—35 10 Claims



1. A process for removing color and stabilizing isophorone characterized by:

(1) distilling a raw synthesis mixture to remove alkaline agents, acetone, and a major portion of the water which is present;

(2) thermally and catalytically treating the distilled isophorone containing mixture with an acidic ion-exchange resin;

(3) treating the effluent resulting from the thermal and catalytic treatment with an excess of an alkaline agent;

(4) neutralizing the excess alkaline in the mixture wherein the pH of the resultant mixture is between about 6.5 and 7;

(5) washing the effluent with water in a volume sufficient to dissolve salts formed by the addition of the alkaline agent;

(6) separating the resulting aqueous layer to provide an organic mixture layer of less than about 1% water content;

(7) distilling the organic mixture under reduced pressure; and

(8) recovering colorless and stable isophorone.

4,248,674

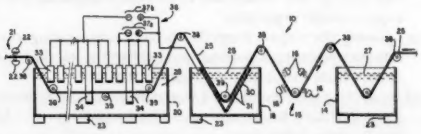
ANODIZING METHOD AND APPARATUS

Henry W. Leyh, P.O. Box 617, Gulf Shores, Ala. 36542

Filed Sep. 20, 1979, Ser. No. 76,981

Int. Cl.[3] C25D *11/04, 17/10*

U.S. Cl. 204—28 8 Claims



1. A method of anodizing a metal web comprising the steps of:

drawing said web through a contact cell containing an electrolyte therein while placing a positive charge predominantly on a first surface of said web;

subsequently drawing said web through an anodizing cell containing said electrolyte while passing a direct current predominantly between a second surface of said web and a cathode within said anodizing cell adjacent to said second surface of said web.

4,248,675

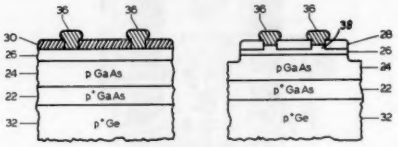
METHOD OF FORMING ELECTRICAL CONTACT AND ANTIREFLECTION LAYER ON SOLAR CELLS

Carl O. Bozler, Sudbury; Ralph L. Chapman, Winchester; John C. C. Fan, Chestnut Hill, and Robert W. McClelland, Weymouth, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Division of Ser. No. 22,405, Mar. 21, 1979, which is a continuation-in-part of Ser. No. 889,078, Mar. 22, 1978, abandoned. This application Feb. 25, 1980, Ser. No. 124,083

Int. Cl.[3] H01L *31/04*

U.S. Cl. 204—38 A 2 Claims



1. A method of applying an electrical contact and an anodic antireflection coating to an n^+ layer of a direct gap semiconductor device, comprising:

a. applying a metal contact to said n^+ layer, said metal being anodizable; and, thereafter

b. anodizing said n^+ layer whereby its thickness is reduced and an antireflection layer is formed thereover.

4,248,676

METHOD FOR TREATING STEEL PLATE AND ITS MANUFACTURE

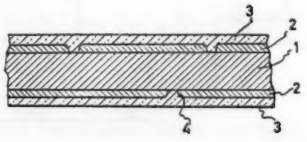
Hiromu Uchida, and Osamu Yanabu, both of Himeji, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation of Ser. No. 858,333, Dec. 7, 1977, which is a continuation of Ser. No. 627,741, Oct. 31, 9175, abandoned, which is a continuation of Ser. No. 430,417, Jan. 3, 1974, abandoned, which is a division of Ser. No. 109,938, Jan. 26, 1971, Pat. No. 3,827,866, which is a continuation of Ser. No. 625,421, Mar. 23, 1967, abandoned. This application Jul. 28, 1978, Ser. No. 928,792

Claims priority, application Japan, Mar. 26, 1966, 41/18522; Nov. 11, 1966, 41-74147

Int. Cl.[3] C25D *3/04, 11/38*

U.S. Cl. 204—56 R 1 Claim



1. A process of forming a chromate film on a chromium plated steel sheet for use in can making, the chromium layer on the steel sheet having a thickness not exceeding about 0.1 micron, which comprises placing the chromium plated steel plate as a cathode into an electroplating bath consisting essentially of about 50 g/liter of chromic acid and about 2 g/liter of sodium silico-fluoride as a reducing agent and containing no sulfuric acid radicals and continuing the electrolysis until a chromate film having a thickness not exceeding 0.1 mg/dm^2 has been formed on the chromium layer, said electrolysis being carried out at a bath temperature of about 40° C., a current density of 5 amperes per dm^2 and for a treating time of about 2 seconds, said thus coated steel sheet possessing excellent corrosion resistance, adhesion for organic coatings and said film being resistant to deterioration on bending.

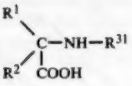
4,248,677

PROCESS FOR PRODUCING ALPHA-AMINOCARBOXYLIC ACIDS AND SALTS THEREOF

Shozo Kato, Tokuyama, Japan, assignor to Tokuyama Soda Kabushiki Kaisha, Yamaguchi, Japan

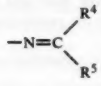
Filed Jul. 10, 1979, Ser. No. 56,187
Claims priority, application Japan, Jul. 10, 1978, 53-82916; Jul. 18, 1978, 53-86694
Int. Cl.[3] C25B *3/00, 3/10*
U.S. Cl. 204—59 R 12 Claims

1. A process for producing alpha-aminocarboxylic acids of the following formula



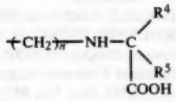
(II)

wherein R^1 and R^2 are the same or different, and represent a hydrogen atom, or a substituted or unsubstituted alkyl, alkenyl or aryl group, and R^1 and R^2 do not represent hydrogen atoms at the same time, R^{31} represents a substituted or unsubstituted alkyl, alkenyl or aryl group; or a hydrogen atom or a group of the following formula



(a')

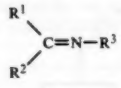
in which R^4 and R^5 are identical or different and have the same definitions as R^1 and R^2 above, when n in R^3 of formula (I) given hereinbelow is 0; or a group of the following formula



(b)

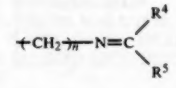
in which n' is an integer of at least 2 and R^4 and R^5 are as defined above, when n in R^3 of formula (I) given hereinbelow is an integer of at least 2;

or salts thereof which comprises subjecting an organic imine compound of the following formula



(I)

wherein R^1 and R^2 are as defined above, and R^3 represents a substituted or unsubstituted alkyl, alkenyl or aryl group, or a group of the following formula



(a)

in which R^4 and R^5 are identical or different, and have the same definitions as R^1 and R^2, and n is 0 or an integer of at least 2,

and carbon dioxide to electrochemical reduction and addition reaction in an aprotic polar organic medium in the substantial absence of water, and thereafter reacting the resulting active carboxylated anion species with a proton donor.

4,248,678

ALKYLATING OF NITROGEN ACIDS USING ELECTROGENERATED BASES AS CATALYSTS

Richard D. Goodin, St. Louis; Richard C. Hallcher, Maryland Hgts., both of Mo., and Manuel M. Baizer, Santa Monica, Calif., assignors to Monsanto Company, St. Louis, Mo.

Filed Oct. 15, 1979, Ser. No. 84,940
Int. Cl.[3] C25B *3/00*
U.S. Cl. 204—59 R 15 Claims

1. A process for alkylating nitrogen acid, acetamides and acetanilides using an alkylating agent and an electrogenerated base comprising

(a) electro-reducing a probase at the cathode by electrolysis in an aprotic liquid electrolysis medium comprising a sterically hindered azobenzene probase, an anhydrous aprotic solvent, and supporting electrolyte to produce an electrogenerated base;

(b) deprotonating a nitrogen acid acetamide or acetanilide, with the electrogenerated base to produce a nitrogen acid, acetamide or acetanilide anion;

(c) reacting the nitrogen acid anion with an alkylating agent of the formula R''W where R'' is aliphatic and W is a chlorine, bromine, iodine or halogen equivalent leaving group to produce an alkylated nitrogen acid acetamide or acetanilide; with the aforesaid probase being more easily electro-reducible than the nitrogen acid and producing an electrogenerated base strong enough to deprotonate the nitrogen acid which is sufficiently acidic to permit such deprotonation, and the electrogenerated base not reacting readily, unless rapidly reversibly, with the alkylating agent.

4,248,679

ELECTROLYSIS OF ALKALI METAL CHLORIDE IN A CELL HAVING A NICKEL-MOLYBDENUM CATHODE

Cletus N. Welch, Clinton, and John O. Snodgrass, Akron, both of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 24, 1979, Ser. No. 6,068
Int. Cl.[3] C25B *1/34, 11/04*
U.S. Cl. 204—98 3 Claims

1. In a method of electrolyzing an alkali metal chloride brine comprising passing an electrical current from an anode to a cathode whereby to evolve Cl_2 at said hydroxyl ion and hydrogen at said cathode, said cathode comprising an electroconductive substrate and a porous surface comprising a major portion of nickel; the improvement wherein said porous surface consists essentially of nickel and a hydrogen overvoltage reducing amount of molybdenum; said porous surface having been prepared by depositing said nickel, said molybdenum, and a leachable material on said substrate and leaching out said leachable material; and the cathode has a substantially impermeable film consisting essentially of nickel interposed between said substrate and said porous surface.

4,248,680

ELECTROLYTIC PROCESS AND APPARATUS

William W. Carlin; William B. Darlington, both of Portland; Donald W. DuBois, and Roseanne M. Woo, both of Corpus Christi, all of Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 24, 1979, Ser. No. 6,069
Int. Cl.[3] C25B *1/34, 11/03, 11/06, 13/08*
U.S. Cl. 204—98 24 Claims

1. In a process of producing alkali metal hydroxide comprising electrolyzing an aqueous alkali metal chloride brine in an electrolytic cell having an anode, a cathode comprising a substrate with a catalytic surface thereon, said anode being separated from cathode by a synthetic fluorocarbon resin permionic membrane, the improvement wherein

a. said flurocarbon resin perminoic membrane is a fluorinated copolymer having carboxylic acid ion exchange groups; and

b. said cathode catalytic surface is a non-ferrous, porous, catalytic, surface.

4,248,681

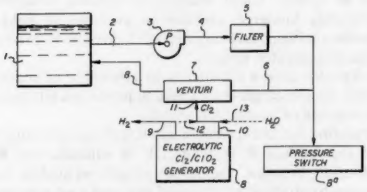
GENERATION OF CHLORINE/CHLORINE DIOXIDE MIXTURES

Charles T. Sweeney, 448 Earle Rd., Hewitt, Tex. 76643

Continuation-in-part of Ser. No. 92,645, Nov. 8, 1979. This application Feb. 13, 1980, Ser. No. 121,115

Int. Cl.³ C25B *1/22, 1/26, 1/46*

U.S. Cl. 204—103 **18 Claims**



1. A method of producing chlorine dioxide or mixtures of chlorine and chlorine dioxide by electrolysis of an aqueous solution of a soluble chloride salt in an electrolytic cell in which the anode and cathode are separated into compartments by a permeable membrane and which includes an electrode positioned in said anode compartment maintained at a potential lower than said anode relative to said cathode, said last named electrode being of a size and shape such that it is completely surrounded by aqueous electrolyte of the said anode compartment, said chlorine dioxide or mixture of chlorine and chlorine dioxide being produced in said anode compartment.

4,248,682

CARBON-CLOTH-BASED ELECTROCATALYTIC GAS DIFFUSION ELECTRODES, ASSEMBLY AND ELECTROCHEMICAL CELLS COMPRISING THE SAME

Robert Lindstrom, Gloucester; Robert J. Allen, Saugus, and Walter Juda, Lexington, all of Mass., assignors to Prototech Company, Newton, Mass.

Filed Sep. 27, 1979, Ser. No. 79,469

Int. Cl.³ C25C *1/14*

U.S. Cl. 204—114 **17 Claims**

1. A thin electrocatalytic gas diffusion electrode and current collector assembly comprising an open pore electrically conducting carbon cloth having a coating of a uniform mixture of catalytic carbon particles and hydrophobic binder particles evenly deposited on said cloth, with said mixture of particles adhered within the cloth pores and to the yarns of the cloth, and a plurality of metallic current-collecting means electrically contacting said cloth and throughout the area thereof and connected to common electric terminal means for external connections, said metallic current-collecting means comprising at least one of highly conductive metal ribbons interwoven with said cloth, metal pins fitted into said cloth, metal grids applied to said cloth, and metal layering upon the yarns of said cloth.

4,248,683

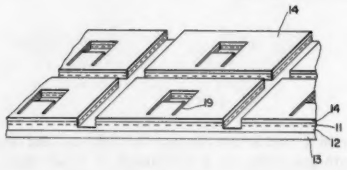
LOCALIZED ANODIC THINNING

Don W. Shaw, Dallas, Tex., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 22, 1980, Ser. No. 142,794

Int. Cl.³ C25F *3/12, 3/14*

U.S. Cl. 204—129.3 **14 Claims**



1. A method for thinning to a desired depth one or more epitaxial layers of a semiconductor structure in selected areas, comprising the steps of:

providing a protective layer over said one or more layers;

forming design patterns in the protective layer to expose the selected areas;

forming moat means in the protective layer surrounding the design patterns;

subjecting the structure to repeated anodizations in an electrolyte to form an oxide in the one or more epitaxial layers; and

removing the oxide.

4,248,684

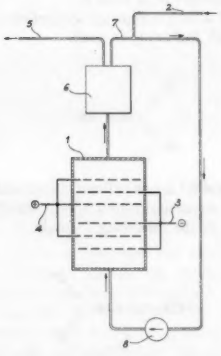
ELECTROLYTIC-CELL AND A METHOD FOR ELECTROLYSIS, USING SAME

Denis Doniat, Paris, France, assignor to SORAPEC Societe de Recherche et d'Applications Electrochimiques, Paris, France

Filed Nov. 2, 1978, Ser. No. 957,040

Int. Cl.³ C02B *1/82*

U.S. Cl. 204—149 **5 Claims**



1. An electrolysis method for electrolytic oxidation or reduction of at least one compound in solution comprising circulating the solution through a vessel containing at least two electrodes immersed therein transversally to the direction of flow, polarizing the electrodes to opposite polarities wherein the solution flows freely through perforations provided in each of said electrodes and additionally admixing particles of a

dispersed electrode to the solution upstream of the vessel, circulating said dispersed electrode together with the solution through said electrodes in said vessel, and separating said dispersed electrode from the solution, downstream the vessel.

4,248,685

METHOD FOR MAKING HYDROPHILIC RANDOM INTERPOLYMER COMPOSITIONS

Charles H. Beede, East Brunswick, N.J.; Harold L. Waldman, Lewisburg, Pa., and Theodore Blumig, East Brunswick, N.J., assignors to Johnson & Johnson, New Brunswick, N.J.

Division of Ser. No. 674,471, Apr. 7, 1976, Pat. No. 4,111,922, which is a continuation of Ser. No. 509,207, Sep. 25, 1974, abandoned, which is a continuation-in-part of Ser. No. 270,118, Jul. 10, 1972, abandoned. This application May 19, 1978, Ser. No. 907,374

Int. Cl.³ C08F *2/46, 4/30*

U.S. Cl. 204—159.22 **13 Claims**

1. A process for preparing a random interpolymer derived from the polymerization of a mixture of monomers, said interpolymer having a water adsorbing capacity of at least about 10 times its own weight after having been dried at a temperature of about 100° C. for about 3 hours; this process comprising the steps of (1) selecting said mixture of monomers so that it comprises: (A) from about 10 to about 90% by weight of said mixture of a first monomer which is an ester of an α,β-olefinically unsaturated carboxylic acid and a monohydric or polyhydric alcohol having a terminal quaternary ammonium group and (B), correspondingly, from about 90 to about 10% by weight of said mixture of at least one α,β-olefinically unsaturated comonomer capable of being dispersed in aqueous media, said comonomer (B) comprising (1) at least 10% by weight of said mixture of monomers of an acid comonomer, or (2) at least 20% by weight of said mixture of monomers of an amide comonomer, or (3) at least 10% by weight of said mixture of monomers of a combination of acid and amide comonomers, said combination containing at least 5% by weight of said mixture of an acid monomer; (II) distributing said mixture of monomers in from about 9 to about 20 parts by weight of an aqueous medium per part of total monomers, said aqueous medium comprising at least 40% by weight of water and up to about 60% by weight of a water miscible organic solvent, and then (III) initiating said polymerization by means of a free radical initiator selected from the group consisting of high energy radiation, photochemical free radical initiators and chemical free radical initiators that are dispersible or soluble in said aqueous medium in the presence of (IV) at least 0.02% by weight, based on the weight of said mixture, of a cross-linking agent comprising a difunctional monomer which is capable of being dispersed or dissolved in said aqueous medium and is an ester or amide of an α,β-olefinically unsaturated carboxylic acid.

4,248,686

CROSS FLOW ELECTROFILTER AND METHOD

Dimitri Gidaspow, Northbrook; Chang H. Lee, Chicago, and Darsh T. Wasan, Westmont, all of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Division of Ser. No. 956,709, Nov. 1, 1978. This application Dec. 6, 1979, Ser. No. 101,033

Int. Cl.³ B01D *17/06;* **B03C** *5/00*

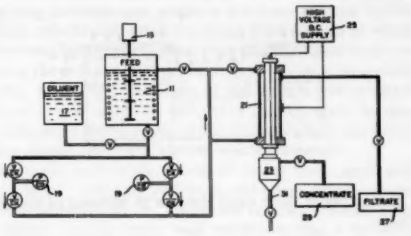
U.S. Cl. 204—184 **10 Claims**

1. A method of electrofiltering carbonaceous liquids from a slurry containing said liquid and solid particles comprising:

controlling the relative permittivity of said carbonaceous liquid by adding a diluent liquid of lower dielectric constant than that of said liquid to said slurry;

passing said slurry along and generally parallel to a surface of a porous filter medium and to an elongated electrode;

establishing an electric field in excess of 1000 volts/cm between the electrode and filter medium in a direction to urge particles away from the filter medium surface; and



filtering a portion of said carbonaceous liquid through said filter medium leaving a slurry concentrated in solid particles.

4,248,687

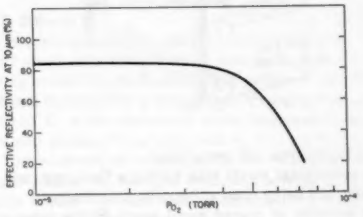
METHOD OF FORMING TRANSPARENT HEAT MIRRORS ON POLYMERIC SUBSTRATES

John C. C. Fan, Chestnut Hill, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 946,264, Sep. 27, 1978, abandoned. This application Jul. 23, 1979, Ser. No. 59,794

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—192 P **10 Claims**



1. In the method of fabricating transparent heat-mirrors including deposition of films of a material selected from doped indium oxide or doped tin oxide on polymer substrates by sputtering, thermal evaporation, vacuum deposition or electron bombardment, the improvement of maintaining a partial pressure of oxygen during deposition within a range which produces films of said material which are transparent to the visible solar spectrum and reflecting to the infrared spectrum without necessary post-deposition treatment.

4,248,688

ION MILLING OF THIN METAL FILMS

Helmut M. Gartner; Steve I. Petvai, both of Wappingers Falls; Homi G. Sarkary, Hopewell Junction, and Randolph H. Schnitzel, Newburgh, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

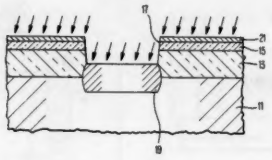
Filed Sep. 4, 1979, Ser. No. 71,649

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—192 E **9 Claims**

1. A process for removing a metal in the presence of its silicide comprising ion milling the metal and the metal silicide in an atmosphere consisting essentially of a noble gas at a pressure range of from about $2\text{–}4\times10^{-4}$ torr with the angle of

incidence of the ion milling on the metal being from about 15° to 45° from the vertical, whereby the metal is removed at a rate



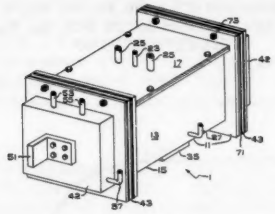
of at least about three times the rate of removal of the metal silicide.

4,248,689

ELECTROLYTIC CELL

Hugh Cunningham, Corpus Christi, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jul. 11, 1979, Ser. No. 56,494
Int. Cl.³ C25B *9/00, 15/08, 13/08, 11/02*
U.S. Cl. 204—252 **12 Claims**



1. An electrolytic cell comprising:

(a) a rectangular anode tank having a floor, top, and sidewalls, and being open at opposite ends thereof;

(b) a plurality of coated metal anode blades substantially parallel to each other and to the anode tank sidewalls, extending upwardly from the anode tank floor;

(c) a cathode unit at each of the opposite open ends of said anode tank, each of said cathode units comprising (1) a cathode tank, (2) a vertical cathode support plate between the cathode tank and the anode tank, and (3) a plurality of individual hollow cathode elements extending perpendicularly outwardly from said cathode support plate, parallel to said anode tank sidewalls and said anode blades, and interleaved between said anode blades;

(d) each of said individual cathode elements being in fluid communication with said cathode tank and with each other through said cathode tank;

(e) each of said individual cathode elements being individually removable;

(f) each of said individual cathode elements bearing a polymeric synthetic separator, said separator (1) being a single sheet enveloping said individual cathode element, (2) having a perforate portion compressively interposed between said one edge of said cathode element and said cathode support plate, and (3) sealed along the other edges of said cathode element; and

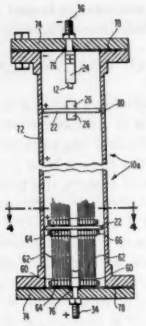
(g) said individual cathode elements compressively bear upon said cathode support plate with said membrane therebetween whereby to provide an electrolyte-tight seal.

4,248,690

APPARATUS FOR PRODUCTION OF SODIUM HYPOCHLORITE

William C. Conkling, Essex Fells, N.J., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Jan. 28, 1980, Ser. No. 115,644
Int. Cl.³ C25B *9/00, 15/08, 1/24*
U.S. Cl. 204—268 **26 Claims**



1. Electrolyzer apparatus for electrolyzing synthetic and natural brines for producing hypochlorite therefrom comprising

a. an elongated electrically non-conductive casing having a horizontally disposed longitudinal axis, said casing having unobstructed openings at both ends thereof,

b. removable cover means secured to each of said casing open ends, each of said cover means having an opening therethrough communicating with interior of casing from exterior thereof,

c. gasket means interposed between said cover means and casing open ends,

d. a first fluid flow passageway through a wall of said casing in the proximity of one end thereof and a second fluid flow passageway through a wall of said casing in the proximity of its other end,

e. a self-standing bipolar electrode assembly of a plurality of at least two cells contained within said casing such that longitudinal axis of said electrode assembly substantially registers with longitudinal axis of said casing, said cell including arrays of interleaved electrode plates consisting of anode plates and cathode plates supported by a framework comprising

i. at least one electrically non-conductive partition disposed normally to said casing longitudinal axis and spaced intermediate the ends of said electrode assembly, said partitions serving to baffle said cells and provide cell compartments therefor

ii. a conducting stud provided at each end of said framework to engage said opening provided in each of said cover means to provide a projecting positive binding post and a projecting negative binding post, and

iii. gasket means interposed between said conducting studs and said cover means.

4,248,691

PROCESS OF PRODUCING A SUSPENSION OF BROWN COAL AND OIL FOR HYDROGENATION

Karl-Heinz Eisenlohr, Dreieich, Fed. Rep. of Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jun. 22, 1979, Ser. No. 51,283

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1978, 2831024

Int. Cl.[3] **C10G** *1/00, 1/06;* **C10L** *1/32*

U.S. Cl. 208—8 LE **12 Claims**

1. A process for producing a low water suspension of fine-grained brown coal and oil which comprises:

(a) disintegrating brown coal having a water content of 35 to 70 percent by weight to a particle size of below 5 mm and mixing the same with oil at a weight ratio of 0.5 to 2:1;

(b) introducing the resultant mixture to a first holding reactor and maintaining the same therein under agitation for at least about one minute at a temperature of 230° to 320° C. under a pressure of 25 to 120 bars;

(c) removing at least a portion of the mixture from the first holding reactor and feeding the same at a temperature of 30° to 200° C. to a phase-separating zone whereby said mixture forms a brown coal-oil phase and a water phase, and withdrawing said water phase;

(d) withdrawing said brown coal-oil phase from said phase-separating zone and introducing it to a second holding reactor;

(e) maintaining said brown coal-oil phase in said second holding reactor for at least about one minute under agitation at a temperature of up to 200° C. under a pressure of up to 10 bars whereby a low-water brown coal-oil suspension and a vaporous water-oil mixture is formed therein; and

(f) from said second holding reactor withdrawing said vaporous water-oil mixture and separately withdrawing said low-water brown coal-oil suspension suitable for hydrogenation, the water content of the brown coal of said suspension being below 10 percent by weight.

4,248,692

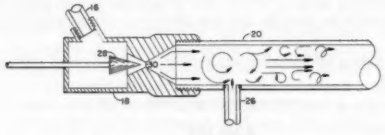
PROCESS FOR THE DISCHARGE OF ASH CONCENTRATE FROM A COAL DEASHING SYSTEM

Alfred H. Knebel, and Donald E. Rhodes, both of Oklahoma City, Okla., assignors to Kerr-McGee Chemical Corporation, Oklahoma City, Okla.

Filed Aug. 29, 1979, Ser. No. 70,563

Int. Cl.[3] **C10G** *1/00, 9/12, 7/00*

U.S. Cl. 208—8 LE **10 Claims**



1. In a process for separating a feed mixture comprising soluble coal products, insoluble coal products and a solvent in a separation zone, said solvent consisting essentially of at least one substance having a critical temperature below 800 degrees F. selected from the group consisting of aromatic hydrocarbons having a single benzene nucleus and normal boiling points below about 310 degrees F., cycloparaffin hydrocarbons having normal boiling points below about 310 degrees F., open chain mono-olefin hydrocarbons having normal boiling points below about 310 degrees F., open chain saturated hydrocarbons having normal boiling points below about 310 degrees F., mono-, di, and tri-open chain amines containing from about 2–8 carbon atoms, carbocyclic amines having a monocyclic structure containing from about 6–9 carbon atoms, heterocyclic amines containing from about 5–9 carbon atoms, and phenols containing from about 6–9 carbon atoms and their homologs, in which said feed mixtures is maintained in said separation zone at an elevated temperature and pressure to separate said feed mixture into a light fraction and into a heavy fraction comprising insoluble coal products and some solvents including some soluble coal products present therein and in which withdrawing said heavy fraction from said separation zone and reducing the pressure level of said heavy fraction at least about 100 psig. results in a deposition of said soluble coal products dissolved in said solvent in said heavy fraction upon the interior surface of a withdrawal conduit through which said heavy phase is passed, the improvement which comprises:

introducing a separate stream of carrier fluid, inert with respect to materials present in said heavy fraction under conditions within the withdrawal conduit, into said withdrawal conduit under such conditions that a turbulent flow profile is formed by at least said stream of said carrier fluid within said withdrawal conduit to prevent or substantially minimize the deposition of or effect removal of any accumulated soluble coal products by contact with said carrier fluid.

4,248,693

PROCESS FOR RECOVERING HYDROCARBONS AND OTHER VALUES FROM TAR SANDS

Rollan Swanson, 220 California Ave., Santa Monica, Calif. 95405

Filed Nov. 15, 1979, Ser. No. 94,685

Int. Cl.[3] **C10G** *1/00, 1/04*

U.S. Cl. 208—11 R **14 Claims**

1. A process for recovering hydrocarbons and other values from tar sands comprising treating said sands with a reagent consisting essentially of an alkali metal sulfide or an alkanolic alkali metal hydrosulfide at a temperature ranging between 40° C. and 450° C. in the presence of steam, hydrogen or mixtures thereof and distillng from said sands at least partly hydrogenated hydrocarbons of reduced sulfur and nitrogen contents, hydrogen sulfide and nitrogen forms and leaving behind substantially decolorized sand and a corresponding alkali metal sulfide of higher sulfur content.

4,248,694

PROCESS FOR TREATING A SOUR PETROLEUM DISTILLATE

David H. J. Carlson, Park Ridge, and Peter Urban, Northbrook, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed May 17, 1979, Ser. No. 39,912

Int. Cl.[3] **C10G** *19/02*

U.S. Cl. 208—206 **7 Claims**

1. A process for treating a mercaptan-containing sour petroleum distillate at oxidation conditions with a metal phthalocyaine oxidation catalyst consisting essentially of a metal phthalocyanine impregnated upon charcoal particles possessing an apparent bulk density of from about 0.25 to about 0.50 grams per cubic centimeter wherein said impregnation of said charcoal particles possessing said apparent bulk density is performed with an aqueous impregnating solution consisting essentially of said metal phthalocyanine dissolved in a solvent consisting essentially of water and wherein said impregnated metal phthalocyanine is then wetted with an aqueous metal hydroxide.

4,248,695
DESULFURIZING A FUEL WITH ALKANOL-ALKALI METAL HYDROSULFIDE SOLUTION

Rollan Swanson, 220 California Ave., Santa Monica, Calif. 90403

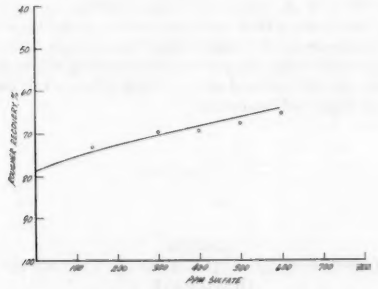
Continuation-in-part of Ser. No. 927,885, Jul. 25, 1978, abandoned. This application Oct. 1, 1979, Ser. No. 80,213
Int. Cl.³ C10G *19/08, 21/16*
U.S. Cl. 208—232 **10 Claims**

1. A process for desulfurizing a sulfur-containing fuel comprising contacting said fuel with a (lower) primary alkanol solution containing an alkali metal hydrosulfide at a temperature and pressure from ambient up to the critical temperature of the alkanol solvent, the water content of said solution being below that which will cause said hydrosulfide to decompose into K_2S hydroxide, and separating said fuel from said alkanol solution now containing the corresponding higher sulfur content alkali metal polysulfide with the proviso that the volume ratio of said alkanol solution to said fuel is determined by the gram mols of sulfur present in the fuel divided by $1\frac{1}{4}$ gram mols of sulfur, when sodium is the alkali metal, times the molecular weight of sodium hydrosulfide divided by the number of grams of sodium hydrosulfide per milliliters of the alkanol solution and the volume ratio of said alkanol solution to said fuel is determined by the gram mols of sulfur present in the fuel divided by 2 gram mols of sulfur, when potassium is the alkali metal, times the molecular weight of potassium hydrosulfide divided by the number of grams of potassium hydrosulfide per milliliters of the alkanol solution.

4,248,696
FLOTATION SEPARATION OF GLASS FROM A MIXTURE OF COMMINUTED INORGANIC MATERIALS

William R. White, Pomona, Calif., assignor to Occidental Research Corporation, Irvine, Calif.

Filed Mar. 2, 1979, Ser. No. 16,900
Int. Cl.³ B03D *1/02*
U.S. Cl. 209—1 **12 Claims**

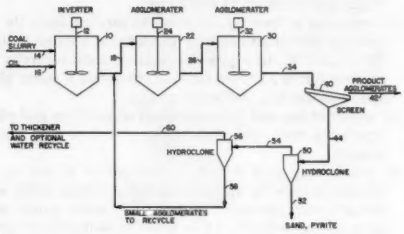


1. A process for separating particulate glass particles from a particulate mixture of inorganic materials containing such particulate glass particles which comprises subjecting a particulate mixture of substantially inorganic materials, including particles of size up to about 10 mesh and containing, as a portion thereof, a quantity of particulate glass particles comprising glasses having the composition of from about 70 percent to about 73 percent by weight SiO_2, from about 11 percent to about 18 percent by weight Na_2O, from about 7 percent to about 17 percent by weight CaO, the balance of the composition being essentially other metal oxides, to froth flotation in a substantially sulfate ion free aqueous flotation medium with a beneficiating amount of at least one functional amine glass collector reagent, said functional amine glass collector reagent containing from about 8 carbon atoms to about 22 carbon atoms in at least one hydrocarbon group attached to a nitrogen atom to form a float fraction comprising predominantly particulate glass particles and an inorganic tailing substantially free of particulate glass particles, at least a portion of said particulate mixture of substantially inorganic materials, exclusive of the particulate glass particles which are responsive to such a beneficiating amount of said functional amine glass collector reagent, being non-responsive to such a beneficiating amount of said functional amine glass collector reagent to cause the particulate glass particles to concentrate in the float fraction.

4,248,697
OIL AGGLOMERATION PROCESS

William J. Halvorsen, Pittsburgh, Pa., assignor to Consolidation Coal Company, Pittsburgh, Pa.

Filed May 29, 1979, Ser. No. 42,748
Int. Cl.³ B03B *1/04*
U.S. Cl. 209—5 **5 Claims**



1. In a method for producing agglomerate particles from an aqueous feed slurry containing from about 10 to about 40 weight percent solids, said solids comprising finely divided carbonaceous solids and finely divided inorganic solids said inorganic solids comprising sand, pyrites and clays by mixing said aqueous slurry containing said solids and oil in a first mixing zone to form a mixture and thereafter further mixing said mixture in at least one other mixing zone thereby forming product agglomerate particles containing said carbonaceous solids and said oil and recovering said product agglomerate particles, the improvement comprising;

(a) separating finely divided inorganic solids consisting of sand, pyrites and clays from said aqueous slurry after separating said product agglomerate particles therefrom;

(b) thereafter separating smaller agglomerates of said carbonaceous solids and oil below the size selected as the minimum in said agglomerate recovery step from said clay containing aqueous slurry after separation of said product agglomerate particles and said inorganic solids therefrom; and

(c) recycling said smaller agglomerates to said other mixing zone.

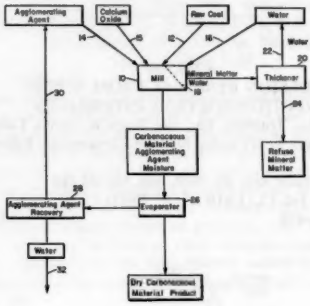
4,248,698
COAL RECOVERY PROCESS

Douglas V. Keller, Jr., Lafayette, N.Y., assignor to Otisca Industries Limited, Syracuse, N.Y.

Continuation-in-part of Ser. No. 958,749, Nov. 8, 1978, abandoned. This application Oct. 5, 1979, Ser. No. 82,131
Int. Cl.³ B03D *3/06*
U.S. Cl. 209—5 **14 Claims**

1. A process for recovering coal with a minimum pyrite content from an aqueous slurry containing raw coal, said process comprising the steps of: maintaining an agglomerant in said slurry; maintaining calcium oxide in the slurry in an amount exceeding that sufficient to form a saturated solution with the aqueous phase of the slurry; concomitantly comminuting the raw coal in said slurry to effect a separation of the coal from pyritic sulfur and other mineral matter associated therewith and to expose fresh surfaces on the coal particles;

coalescing the separated coal particles into agglomerates while effecting a dispersion of the pyritic sulfur and other mineral



matter in the aqueous liquid carrier portion of the slurry; and recovering the agglomerates from the slurry.

4,248,699

PNEUMATIC CLASSIFIER

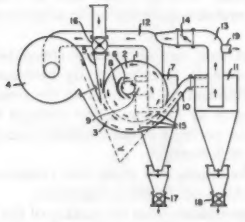
Risto T. Hukki, Espoo, Finland, assignor to Kennedy Van Saun Corporation, Danville, Pa.

Continuation of Ser. No. 919,251, Jun. 26, 1978, abandoned. This application Oct. 9, 1979, Ser. No. 82,946

Claims priority, application United Kingdom, Jul. 9, 1977, 28890/77

Int. Cl.³ B04C *3/00*

U.S. Cl. 209—144 **3 Claims**



1. A pneumatic classifier for separating a finer and coarser product of a material to be classified comprising a classification chamber having a circular portion and an arcuate portion adjacent and in substantially open communication with the lower region of the circular portion for unobstructed flow of the coarser product from the circular to the arcuate portions, the arcuate portion having a tangential inlet and a tangential discharge and the unobstructed portion extending substantially from the inlet to the discharge, a blower introducing a stream of pneumatic fluid into the inlet of the arcuate portion to produce a swirling stream through the arcuate portion to the discharge thereof and around the circular portion to form an inner stream which merges with the inner portion of the incoming stream, separate means for feeding the material to be classified downwardly intermediate the circular and arcuate portions and intermediate the incoming and inner swirling streams, the feed being initially displaced downwardly into the arcuate portion between the merging stream while part of the incoming stream passes through the feed material to carry the finer particles into the circular portion while the coarser particles are carried outwardly through the unobstructed open communication between the circular and arcuate portions into the arcuate portion by centrifugal force, a fine particle discharge for receiving products discharged from the region within the circular portion within the swirling stream, a coarse product cyclone to receive the coarser particles discharged from the discharge of the arcuate portion, a fine product cyclone to receive the finer particles discharged from the circular portion of the chamber, return conduits connecting the upper regions of both cyclones with the intake of the blower, and adjustable flow control means in only the return conduit connecting the upper region of the coarse product cyclone and the intake of the blower and providing the principal control over the ratio of fine and coarse product separated in the chamber.

4,248,700

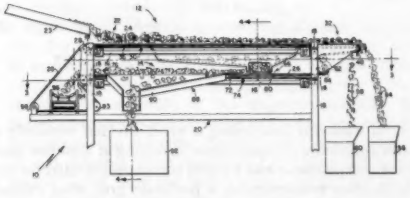
TRANSIT MATERIALS SEPARATOR

Malcolm M. Paterson, Lee, N.H., and Bela M. Fabuss, Winchester, Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Apr. 13, 1979, Ser. No. 29,811

Int. Cl.³ B03C *1/22, 1/24*

U.S. Cl. 209—212 **15 Claims**



6. A materials separator apparatus for segregating electrically conductive items of nonferromagnetic material from commingled materials and comprising:

input means disposed for producing an egressing stream of the commingled materials including electrically conductive items of nonferromagnetic material;

guide means disposed adjacent the input means for receiving therefrom the egressing stream and directing it longitudinally along a horizontally oriented path;

steady-state magnetic means disposed adjacent the path to establish therein a spatially alternating series of oppositely directed and substantially parallel magnetic fields transversely at an oblique angle to the stream for inducing eddy-currents in the electrically conductive items of nonferromagnetic material and producing force components which deflect the items laterally out of the stream; and

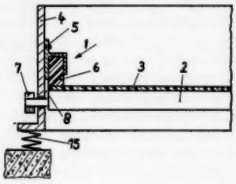
magnetic separator means disposed adjacent a portion of the path beyond the steady-state magnetic means for removing ferromagnetic material from the residual commingled materials in the stream.

4,248,701

SIDE SEAL ASSEMBLY FOR A SCREENING MACHINE

Theo Wenzel, Egmating, Fed. Rep. of Germany, assignor to Hein, Lehmann AG, Dusseldorf, Fed. Rep. of Germany

Filed Mar. 30, 1979, Ser. No. 25,431
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1978, 2813630
Int. Cl.[3] B07B *1/46*
U.S. Cl. 209—363 11 Claims



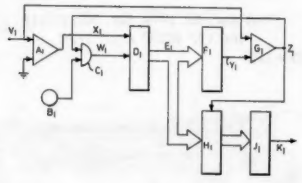
4. The side seal assembly according to claim 6, wherein said sealing element consists completely of elastic foam plastic.

4,248,702

STRATIFIER DISCHARGE CONTROL

Walter M. Wallace, Carlisle, and Geoffrey F. Craven, Bradford, both of England, assignors to Norton-Harty Colliery Engineering Limited, United Kingdom

Continuation-in-part of Ser. No. 868,931, Jan. 12, 1978, Pat. No. 4,176,749. This application Aug. 8, 1979, Ser. No. 64,788
Claims priority, application United Kingdom, Jan. 15, 1977, 1659/77; Apr. 30, 1977, 18172/77
Int. Cl.[3] B03B *5/20*
U.S. Cl. 209—455 8 Claims



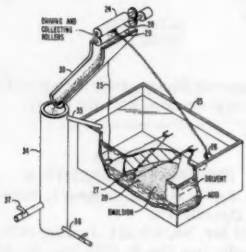
1. In wash-box comprising a vessel divided vertically into water-containing compartments, including at least one stratification compartment and a reject compartment adjacent to the stratification compartment, a perforate grid plate extending across upper parts of the compartments, the wash-box comprising first pulsation means associated with the stratification compartment and which is operative to produce a cyclic rise and fall in the water in the stratification compartment, said pulsations being effective generally to stratify the material on the grid plate above the stratification compartment, and second pulsation means associated with the reject compartment and which is operative to produce cyclic rise and fall in the water in said reject compartment, the pulsations applied to the reject compartment determining the rate at which the heavier fraction of reject material falls from the grid plate into a reject extraction chamber adjacent to the reject compartment, sensing means associated with the stratification compartment and which is responsive to the pressure produced in the stratification compartment on the application thereto of each pulse, and control means associated with the second pulsation means and which is operative to vary the pressure of the pulsations applied to the reject compartment in accordance with the response of the sensing means, the improvement where in the frequency at which the pulsations are applied to the reject compartment is a multiple greater than one of the frequency at which the pulsations are applied to the stratification compartment.

4,248,703

EMULSION REMOVAL FROM ACIDIC SOLUTION-SOLVENT INTERFACES

Floyd E. Camp, Trafford, Pa., and Regis R. Stana, Lakeland, Fla., assignors to Wyoming Mineral Corporation, Lakewood, Colo.

Filed Apr. 30, 1979, Ser. No. 34,310
Int. Cl.[3] C01B *25/16;* B01D *11/00*
U.S. Cl. 210—676 9 Claims



1. A process for removing emulsions at the interface of an acidic solution and a solvent immiscible in the acid solution, comprising the steps of:

(A) providing a separated composition comprising an acidic solution phase, solvent phase, and an emulsion phase disposed therebetween at the acidic solution-solvent phase interface,

(B) passing at least one continuous string belt of fibrous material, having a specific gravity between that of the acidic solution and the solvent, into the composition, and then passing it by floating action through the emulsion phase, where portions of the emulsion attach to the surface of the belt material,

(C) passing the continuous string belt containing attached, loaded emulsion out of the composition,

(D) removing emulsion from the surface of the string belt in a manner effective to prevent return of the emulsion back into the composition, and

(E) collecting the removed emulsion.

4,248,704

PHENYLALANINE AMMONIA LYASE OCCLUDED FIBERS FOR REDUCING PHENYLALANINE BLOOD-LEVEL

Walter Marconi, Milan; Francesco Bartoli, Rome; Roberto Gianna, Rome; Franco Morisi, Rome, and Giuseppina Spotorno, Rome, all of Italy, assignors to Snamprogetti S.p.A., Milan, Italy

Filed May 3, 1979, Ser. No. 35,528
Claims priority, application Italy, May 12, 1978, 23336 A/78
Int. Cl.[3] B01D *13/00*
U.S. Cl. 210—632 1 Claim

1. Method for the reduction of the phenylalanine level in blood or another medium containing phenylalanine, consisting in contacting said blood or said media with a composition which comprises the enzyme phenylalanine ammonia lyase occluded in porous fibers of cellulose triacetate which have been made biocompatible by dispersing therein 4,5-diphenyl-2-bis(2-hydroxyethyl) amino oxazole.

4,248,705

PROCESS FOR REMOVING OIL FROM OILY WASTE WATER STREAMS

Mohan Vadekar, Florham Park, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 5, 1977, Ser. No. 794,046
Int. Cl.[3] C02F *1/28*
U.S. Cl. 210—680 14 Claims

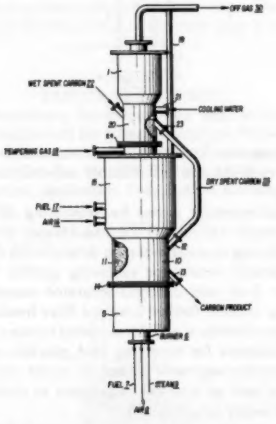
1. In a process for removing free and emulsified oil from oily water streams wherein at least a portion of said emulsified oil is a relatively olefinic, reactive, polymerizable species comprising passing the oily water stream through a bed of one or more unprocessed, granular vinyl chloride-containing polymeric compounds which compounds contain at least 50 mole percent of vinyl chloride or its equivalent in carbon-chlorine bonds, the improvement which comprises granular, inert filler material mixed with said polymeric vinyl chloride-containing polymeric compounds in the bed, thereby substantially reducing the pressure drop across the bed and greatly increasing its useful life.

4,248,706

TWO STAGE FLUID BED REGENERATION OF SPENT CARBON

Albert J. Repik, Charleston, S.C., assignor to Westvaco Corporation, New York, N.Y.

Filed Sep. 29, 1978, Ser. No. 947,059
Int. Cl.[3] B01J *20/34;* B01D *53/08;* C02F *1/28;* C01B *31/10*
U.S. Cl. 210—673 13 Claims



1. A method for regenerating wet spent carbon containing organic volatile impurities comprising:

a. heating said wet spent carbon containing said volatile impurities in a drying zone at a temperature wherein volatilization of the impurities in the carbon is minimized utilizing a hereinafter specified drying gas to form dried spent carbon containing volatile impurities;

b. passing said dried spent carbon containing said volatile impurities to a reactivation zone;

c. contacting said dried spent carbon in said reactivation zone with combustion gases at pyrolysis conditions which liberate said volatile impurities therefrom, to form reactivated dried spent carbon and reactivation zone gaseous effluent comprising liberated volatile impurities;

d. passing said reactivation zone gaseous effluent to an incineration zone, said incineration zone being contiguous and in open communication with said reactivation zone; and

e. burning the combustible components in said reactivation zone gaseous effluent in said incineration zone to form an incineration zone gaseous effluent, said incineration zone being intermediate between said drying zone and said reactivation zone and said incineration zone gaseous effluent being used as the drying gas in step a.

3. The method of claim 1 wherein reactivation is effected with steam in addition to combustion gases whereby carbon monoxide and hydrogen are formed in said reactivation zone, said carbon monoxide and hydrogen being burned in said incineration zone along with said liberated volatiles.

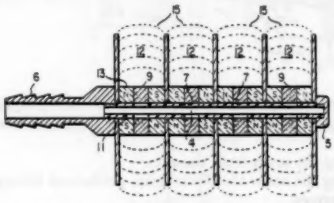
12. The method of claim 1 wherein the wet spent carbon is recovered from a liquid or gaseous stream, processed according to claim 1 and reused.

4,248,707

GAS DIFFUSER, AERATOR, OR SPARGER METHOD

Steven T. Granger, Falls Church, Va., assignor to Thompson Marine Corporation, Arlington, Va.

Division of Ser. No. 21,323, Mar. 16, 1979. This application Jan. 17, 1980, Ser. No. 112,911
Int. Cl.[3] B01F *3/04, 13/08*
U.S. Cl. 210—695 6 Claims



1. In a method for treating liquid with an aqueous component wherein diffuser means are utilized for discharging a gas into the body of liquid for the treatment thereof, and the method includes the steps of providing a first gas chamber submerged in said body of liquid, providing a source of gas and inlet means therefor in communication with the interior of said gas chamber, providing outlet means for gas from said chamber comprising at least one perforation located in an end wall of said chamber opposite said inlet means;

the improvement comprising providing a second magnetic chamber defined by spaced apart opposed sidewalls made of material magnetizable or conductive to lines of magnetic flux, providing means for inducing magnetic poles in the opposed sidewalls of the magnetic chamber, said means constructed and arranged to provide magnetic flux lines across said magnetic chamber, the opposed sidewalls of said chamber being constructed and arranged to both permit liquid from the liquid body and gas discharged from the gas chamber to enter a portion of said magnetic chamber, pass between its sidewalls intersecting the magnetic flux lines between its sidewalls and be discharged from another portion of said magnetic chamber, whereby both the gas and the aqueous component of the liquid into which discharged are simultaneously caused to intersect said magnetic flux lines in treating the gas, treating contaminants suspended in the liquid, and aiding the dissolution of the gas in the aqueous component of the liquid.

4,248,708

PURIFICATION OF FLOTATION TAILINGS WATER

Martin Wilson, Irvine, Calif., assignor to United States Borax & Chemical Corporation, Los Angeles, Calif.

Filed Aug. 24, 1979, Ser. No. 69,415
Int. Cl.[3] C02F *1/56*
U.S. Cl. 210—727 10 Claims

1. The method of purifying and clarifying a basic aqueous flotation tailings slurry which comprises sequentially adding first a cationic polygalactomannan flocculant and then a nonionic poly(ethylene oxide) fluocculant to said slurry, allowing

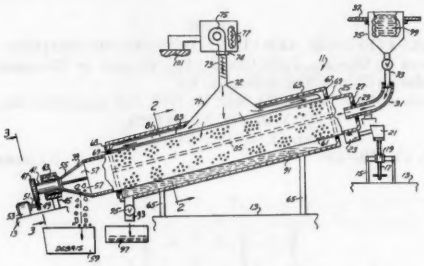
the solids to settle and separating the purified and clarified liquor from said settled solids.

4,248,709

METHOD OF FILTERING SEWER SCUM AND APPARATUS THEREFOR

Robert Irving, 18495 Sunset, Detroit, Mich. 48234

Filed Sep. 7, 1979, Ser. No. 73,260
Int. Cl.³ C02F 1/40
U.S. Cl. 210—769 **25 Claims**



1. The method of treating sewer scum including liquid and partly congealed combustibles and debris which includes the steps of:

collecting the scum from sewage;

delivering the scum to a filter drum perforated throughout 360 degrees;

continuously rotating the drum at at least 1 RPM approximately upon a longitudinal axis inclined at an acute angle;

applying air heated to at least 200 degrees F. approximately under pressure of at least 500 CFM approximately to the exterior wall of the drum along a line over its length and through the perforations therein for successively lifting the debris from the perforations, heating and melting the combustibles and for advancing the accumulated debris along the length of the drum;

discharging the debris from the drum;

and continuously collecting the filtered combustibles from the drum.

14. Apparatus for filtering sewer scum containing liquid and partly congealed combustibles and debris comprising an elongated cylindrical drum having a perforated portion throughout 360 degrees and a longitudinal axis, mounted upon a support;

means on the support journaling the drum at its opposite ends for rotation along its axis;

the axis being inclined at an acute angle to the horizontal;

rotative drive means connected to the drum for continuously rotating the drum;

an apertured upper end wall on the drum, adapted to receive preheated sewer scum;

an apertured lower end wall on the drum adapted to discharge collected debris from the drum interior;

a cylindrical shell spaced from and enclosing the perforated portion of the drum having a similarly inclined longitudinal axis mounted upon the support, having apertured end walls sealingly engaging the drum outwardly of its perforations;

spaced baffles upon the interior of said shell extending toward said drum; the shell and baffles defining a pressure chamber above the drum and a filtered scum collection chamber below the drum;

an elongated air channel upon the interior of the shell along its length within the pressure chamber and having a throated outlet extending along and spaced from the perforations of said drum;

a plenum mounted upon said shell intermediate its length having an outlet communicating with said channel and an inlet;

an air blower spaced from the shell having a heater and an outlet for delivering heated air under pressure;

a duct interconnecting said outlet and the plenum inlet;

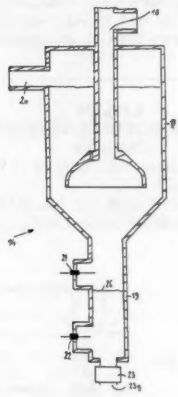
and a valved outlet adjacent the lower end of said shell communicating with said scum collection chamber.

4,248,710

APPARATUS FOR THE PURIFICATION OF WATER POSSESSING SOLVENT WASTE CONTENT

Jack Rampignon, 116 rue Pierre Valdo, Lyons 5eme, France

Filed Feb. 8, 1979, Ser. No. 10,241
Claims priority, application France, Mar. 31, 1978, 78 10350
Int. Cl.³ B03D 3/00
U.S. Cl. 210—104 **11 Claims**



1. An apparatus for the purification of a water solution possessing miscible and nonmiscible solvent, said apparatus comprising:

a decanter-separator means for separating by decantation said nonmiscible solvent from said water solution;

a main filtering element mounted downstream of said decanter-separator means for receiving gravity fed miscible solvent from said decanter-separator means, said main filtering element further having a filter housing having at least two chambers, an inlet mounted to one of said at least two chambers for receiving said miscible solvent from said decanter-separator means; an outlet mounted to another of said at least two chambers to discharging said filtered water solution; and

means for detecting solvent vapor mounted downstream of said main filtering element, said detection means comprising:

an outlet;

an inlet located above said outlet;

water storage means interposed said inlet and said outlet, said storage means receiving gravity fed discharged water from said filtering element through said inlet of the detection means;

a source of air located in said storage means below the water level of said discharge water; and

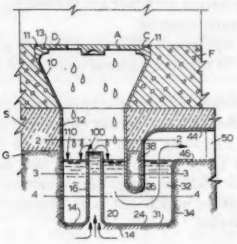
a detection cell mounted in said water storage means above the water level of said discharge water, such that, as the water solution enters the inlet of said detection means, the solution is gravity fed to said water storage means and said air of said air source is bubbled through said water solution to generate a solvent vapor which passes by said detection cell mounted above said water level in said water storage means whereby said solvent in said water storage means is monitered.

4,248,711

BASEMENT FLOOR DRAIN AND INTEGRAL TRAP

Thomas L. Fitzpatrick, 50 Nightingale Ave., Massena, N.Y. 13662

Filed Jun. 2, 1980, Ser. No. 155,430
Int. Cl.[3] F03F *5/06*
U.S. Cl. 210—163 **3 Claims**



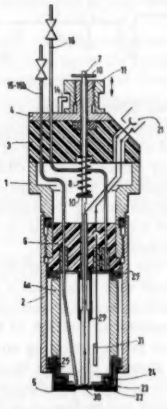
1. In a drain for a basement floor having a circular bowl portion, a strainer plate covering the bowl portion, a U-shaped main trap conduit positioned below the bowl portion and fluidically connected at one end to the bowl portion and leading from the other end to a discharge outlet, the improvement comprising a secondary inlet conduit fluidically connected to the bowl portion and leading through the bowl from the exterior ground area in which the arrangement is seated beneath the floor, the secondary inlet conduit having a discharge end disposed above the fluid level of the main trap conduit.

4,248,712

ELECTRODE DEVICE

Gerd D. Bauermeister, Isernhagen, Fed. Rep. of Germany, assignor to Gesellschaft fur Biotechnologische Forschung mbH, Braunschweig-Stockheim, Fed. Rep. of Germany

Filed Jan. 8, 1979, Ser. No. 1,458
Claims priority, application Fed. Rep. of Germany, Jan. 12, 1978, 2801223
Int. Cl.[3] G01N *27/30*
U.S. Cl. 204—195 P **4 Claims**



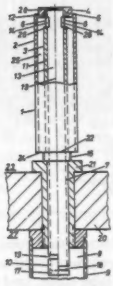
1. Electrode device having an electrolyte container, the opening towards the test medium being closed by a membrane member, a cathode being provided within the electrolyte container and having the shape of the end section of a precious metal conductor protruding from an insulating body, the insulating body being displaceable perpendicularly with respect to the plane of the membrane element, and a reference electrode being provided within the electrolyte container, further characterized in that the electrolyte container is a pressure chamber equipped with pressure resistant valves for introducing and removing an electrolyte and that the insulating body is biased by a spring against the membrane member and can be separated from the membrane member during a sterilization.

4,248,713

FILTRATION PLANT

Josef Meier, Engelburg, Switzerland, assignor to Filtrox Maschinenbau A.G., Engelburg, Switzerland

Filed Oct. 24, 1978, Ser. No. 954,106
Claims priority, application Switzerland, Nov. 12, 1977, 13773/77
Int. Cl.[2] B01D *35/00*
U.S. Cl. 210—232 **14 Claims**



1. In a candle filter filtration unit comprising a filter vessel, a wall plate disposed in said vessel and separating the same into a lower feedsection and an upper discharge section of the vessel interior, a plurality of filter candles each suspended at their upper ends from said wall plate and opening into said upper discharge section and means for supplying cleaning liquid under pressure to said discharge section for passage into said filter candles to remove sediment deposited on said filter candles, in combination, the improvement comprising a plurality of similar damming means, one communicating with the upper end of each such filter candle, for temporarily preventing flow of said cleaning fluid supplied to said upper section into any upper candle end until the level of such fluid accumulated in said upper section is sufficient to provide flow into such candle ends generally simultaneously and then permitting the passage of such fluid into the candle ends in amounts sufficient to remove said deposited sediment from all of said candles.

4,248,714

FILTER

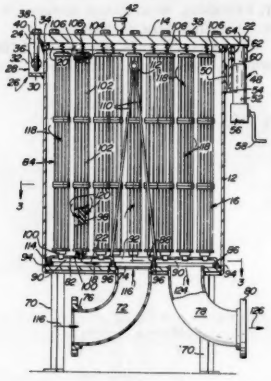
William A. Acosta, 4101 Laurel Dr., Lafayette Hill, Pa. 19444

Filed Nov. 17, 1978, Ser. No. 961,593
Int. Cl.[3] B01D *29/24, 29/32*
U.S. Cl. 210—238 **43 Claims**

1. A filter comprising a tank and a filter assembly removably mounted in said tank, said filter assembly comprising a tube sheet, filter means secured on said tube sheet, said tube sheet having a peripheral skirt projecting downwardly therefrom, gasket means secured on the bottom of said peripheral skirt, said gasket means being in contact with the bottom of said filter tank, whereby a plenum chamber is formed by said tube sheet, peripheral skirt and bottom, spring means for urging said gasket means against said bottom to form a fluid-tight seal between said plenum chamber and said bottom, said plenum chamber being in fluid communication with said filter means, whereby the filtrate passing through said filter means enters

said plenum chamber, and outlet means for said filtrate in fluid communication with said plenum chamber.

24. A filter comprising a tank and a filter assembly removably mounted in said tank, said filter assembly comprising a tube sheet, filter means secured on said tube sheet, said tube sheet having a peripheral skirt projecting downwardly therefrom, gasket means at the bottom of said peripheral skirt, said gasket means being in contact with the bottom of said filter tank, whereby a plenum chamber is formed by said tube sheet,



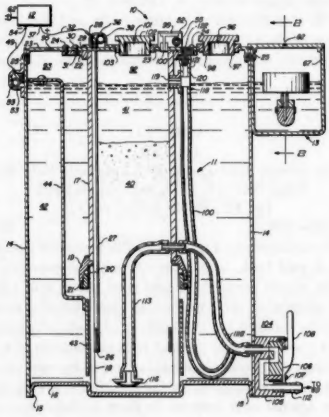
peripheral skirt and bottom, said tube sheet having a second dependent skirt, said peripheral skirt and said dependent skirt being unitary with said tube sheet, said skirts being spaced, and serving as vertical walls for said plenum chamber, gasket means on said second dependent skirt, said plenum chamber being in fluid communication with said filter means, whereby the filtrate passing through said filter means enters said plenum chamber, and outlet means for said filtrate in fluid communication with said plenum chamber.

4,248,715

ELECTROLYTIC CHLORINE GENERATOR

Paul D. Olivier, 4851 E. Fanfol Dr., Scottsdale, Ariz. 85253

Filed Nov. 23, 1979, Ser. No. 97,048
Int. Cl.[3] **C25B** *9/00, 13/04, 1/26*
U.S. Cl. 204—260 **13 Claims**



1. An electrolytic cell for generating gaseous chlorine comprising:

a cathode chamber,

an anode chamber for containing therein a concentrated aqueous solution of a metallic chloride,

said anode chamber being at least partially formed of a porous ceramic material,

an anode mounted in said anode chamber for extending into the aqueous solution when placed therein,

a cathode mounted in said cathode chamber and being in communication with said anode chamber through pores in said ceramic material,

means for supplying a DC voltage across said anode and said cathode to produce gaseous chlorine in said anode chamber,

a conduit extending from the upper end of said anode chamber for discharging gaseous chlorine from said cell, and

a conduit extending from said cathode chamber for discharging gaseous hydrogen from said cell,

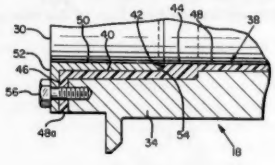
said ceramic material comprising aluminum oxide and magnesium oxide which has been plastically deformed and then annealed.

4,248,716

TRUNNION AND TRUNNION PACKING SLEEVE INSERT FOR ROTARY DRUM FILTER

Richard W. LaValley, Vancouver, Wash., assignor to LaValley Industrial Plastics, Inc., Vancouver, Wash.

Filed Apr. 22, 1979, Ser. No. 32,097
Int. Cl.[3] **B01D** *33/06*
U.S. Cl. 210—402 **10 Claims**



1. In a rotary drum filter including a cylindrical filter drum with trunnions at opposite ends mounting said drum for rotation about a central axis, and with one of said trunnions being hollow and rotatably connected to an end portion of a stationary pipe in communication with a source of vacuum to drain filtrate from said drum during its rotation, and fluid sealing means between said pipe and hollow trunnion at a rotatable connection therebetween,

characterized in that said hollow trunnion comprises:

an inner cylindrical wall lined with a fiberglass-reinforced plastic material and having a recessed cylindrical surface portion at an outer end portion of said inner wall, said recessed surface portion meeting an adjacent inner wall portion at an annular shoulder to define a recess, said recessed surface portion extending axially to an intersection with an outer end surface of said hollow trunnion so that said recess defines a seat,

a cylindrical sleeve insert of a wear-resistant material for mounting on said seat, said insert having an outer flange collar, and

fastening means for removably connecting said sleeve insert to said hollow trunnion with said insert positioned on said seat and said collar overlapping said outer end surface.

4,248,717

METHOD FOR REMOVING ELEMENTAL SULFUR FROM HIGH TEMPERATURE, HIGH PRESSURE WELLS AND FLOW LINES

Shelby P. Sharp, Tulsa, Okla., and Lyman Yarborough, Naperville, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed May 29, 1979, Ser. No. 43,520
Int. Cl.[3] E21B *43/00*
U.S. Cl. 252—8.55 B 3 Claims

1. A method of dissolving a deposit of elemental sulfur in a high temperature, high pressure sour gas well, characterized in that an aliphatic amine activated dialkyl disulfide sulfur solvent will not exist in a liquid phase at bottomhole conditions of said well for a sufficient time to effect the removal of said sulfur deposits, comprising the steps of:

(a) preparing a relatively nonvolatile, high molecular weight, amine activated dialkyl polysulfide sulfur solvent capable of existing in a liquid phase at said bottomhole conditions consisting of a dialkyl disulfide to which has been added up to about 27 parts by weight of an alkyl amine per 100 parts by weight dialkyl disulfide and at least about 60 parts by weight of elemental sulfur per 100 parts by weight dialkyl disulfide, and

(b) injecting said relatively nonvolatile, high molecular weight amine activated dialkyl disulfide sulfur solvent prepared in step (a) into said sour gas well to dissolve and thus remove said sulfur deposit.

4,248,718

OVERBASED LUBRICATING OIL ADDITIVE

Ronald J. Vaughan, Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Dec. 26, 1978, Ser. No. 972,760
Int. Cl.[3] C10M *1/40, 1/32, 3/34, 3/26*
U.S. Cl. 252—33 16 Claims

1. A process for the preparation of a lubricating oil additive composition consisting essentially of combining in a solvent at a temperature suitable for reaction to occur:

(a) at least one ashless nitrogen-containing compound selected from the class consisting of ammonia, ammonium salts, and organic compounds containing only carbon, hydrogen, and nitrogen and having at least one —NH— group,

(b) a basically reacting metallic compound,

(c) at least one suspending agent for component (b), and

(d) a chalcogen compound selected from carbon dioxide, carbon disulfide, carbon oxysulfide and sulfur dioxide, and mixtures thereof, the ratio of the reactants (a), (b), (c) and (d) being such that from about ¼ to about ¾ of the alkalinity value of the additive composition is derived from the ashless portion of said composition and wherein per equivalent of the basically reacting metallic compound, the reaction mixture contains from 0.3 to 2.0 equivalents of the nitrogen compound, from 1 to 3 equivalents of the chalcogen compound and from 2 to 20 parts per weight of the suspending agent per part of the basically reacting metallic compound.

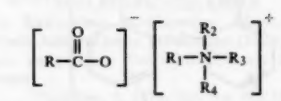
4,248,719

QUATERNARY AMMONIUM SALTS AND LUBRICATING OIL CONTAINING SAID SALTS AS DISPERSANTS

Harry Chafetz, Poughkeepsie, N.Y., and Gary D. Lee, Spring, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Aug. 24, 1979, Ser. No. 69,450
Int. Cl.[3] C07D *207/12;* C10M *1/20, 1/32*
U.S. Cl. 252—34 8 Claims

1. A quaternary ammonium salt suitable as a detergent-dispersant in lubricating oils, said salt having the formula:



wherein R is a substituted aryl group having from 6 to 10 carbon atoms; R_1 is a lower alkyl group of 1 to 5 carbon atoms, R_2 and R_3 are the same or different alkyl groups having from 1 to 8 carbon atoms and R_4 is an alkenylsuccinimidyl alkyl or an alkenylsuccinoxy alkyl group having from 60 to 200 carbon atoms.

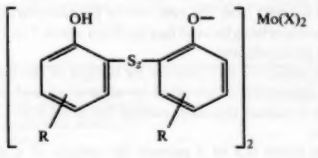
4,248,720

ORGANO MOLYBDENUM FRICTION-REDUCING ANTIWEAR ADDITIVES

Keith Coupland, Sarnia; Clinton R. Smith, Camlachie, and Juan M. Salva, Sarnia, all of Canada, assignors to Exxon Research & Engineering Co., Florham Park, N.J.

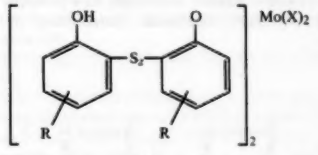
Continuation-in-part of Ser. No. 843,964, Oct. 20, 1977, abandoned. This application May 3, 1979, Ser. No. 35,724
Int. Cl.[3] C10M *1/54, 3/48;* C01L *1/14;* C07F *15/04*
U.S. Cl. 252—42.7 15 Claims

1. An organo molybdenum complex represented by the formula



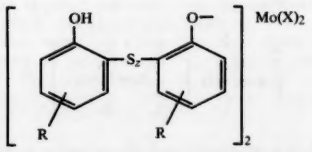
wherein R is a substantially hydrocarbyl group containing from 1 to 50 carbon atoms, z is 1-3 and X is selected from sulfur or oxygen.

8. A hydrocarbon composition comprising a major portion of a hydrocarbon and at least a friction-reducing amount of the combination of: (a) an organo molybdenum complex represented by the formula:



where z is 1-3 and X is selected from oxygen or sulfur and R is a substantially hydrocarbyl group containing from 1 to 50 carbon atoms; and (b) an oil-soluble active sulfur donor being a metal dihydrocarbyl dithiophosphate or dithiophosphoric ester, a phosphosulfurized pinene, a sulfurized olefin or hydrocarbon, a sulfurized fatty ester or a sulfurized alkyl phenol, said combination providing from about 0.005 to 0.2 weight percent molybdenum and said sulfur donor being present in at least 0.25 weight percent, all of said weight percents being based on the total weight of said composition.

15. A gasoline having improved antiwear properties containing from 10 to 1,000 parts per million of an organo molybdenum complex represented by the formula:



wherein R is a substantially hydrocarbyl group containing from 1 to 50 carbon atoms, z is 1–3 and X is selected from sulfur or oxygen.

4,248,721

SYNTHETIC AIRCRAFT TURBINE OIL

Roberta Yaffe, Beacon, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 810,713, Jun. 28, 1977, abandoned. This application Oct. 24, 1978, Ser. No. 954,255

Int. Cl.³ C10M *1/48*

U.S. Cl. 252—46.7 **10 Claims**

1. A synthetic lubricating oil composition consisting of a major portion of an aliphatic ester base oil having lubricating properties formed from the reaction of pentaerythritol and an organic monocarboxylic acid having from about 2 to 18 carbon atoms per molecule and

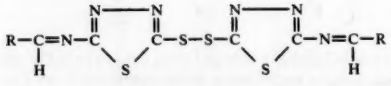
(a) from about 0.3 to 5 percent by weight of the lubricating oil composition of an alkyl or alkaryl phenyl naphthylamine in which the alkyl radical has from 4 to 12 carbon atoms,

(b) from about 0.3 to 5 percent by weight of a dialkyldiphenylamine in which the alkyl radicals have from 4 to 12 carbon atoms,

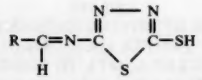
(c) from about 0.01 to 0.05 percent by weight of a polyhydroxy substituted anthraquinone,

(d) from about 0.25 to 10 percent by weight of a hydrocarbyl phosphate ester in which said hydrocarbyl radical contains an aryl ring and contains from about 6 to 18 carbon atoms, and

(e) from about 0.005 to 0.05 percent by weight of a thiadiazole derivative mixture containing as a principal product an alkylidenimino thiadiazole characterized by the formula:



where R is alkyl of rom 2 to 30 carbons, said thiadiazole derivative mixture being prepared by the process comprising first contacting 2-amino-5-mercapto-1,3,4-thiadiazole with an alkanal of the formula RCHO where R is alkyl of from 2 to 30 carbons at a temperature of between about 20° and 250° C. utilizing a mole ratio of 2-amino-5-mercapto-1,3,4-thiadiazole to alkanal of between about 10:1 and 1:2 to form an intermediate thiadiazole product characterized by the formula:



and second contacting said intermediate thiadiazole product with dimethyl sulfoxide at a temperature of between about 20° and 150° C. utilizing a mole ratio of said intermediate to said dimethyl sulfoxide of between about 3:1 and 1:50 to form said thiadiazole derivative mixture.

4,248,722

Patent Not Issued For This Number

4,248,723

ACETAL DERIVATIVES AS EXTREME PRESSURE ADDITIVES FOR LUBRICANTS

Andreas Schmidt, Reinach, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

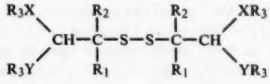
Filed Jun. 14, 1978, Ser. No. 915,624

Claims priority, application Switzerland, Jun. 23, 1977, 7721/77

Int. Cl.³ C10M *1/38*

U.S. Cl. 252—48.6 **6 Claims**

1. An acetal derivative of the formula I



(I)

in which R_1 and R_2 are identical or different C_1–C_{12} alkyl or together are C_4–C_7 alkylene, X and Y are each O and R_3 is (C_1–C_{18}-alkoxy)-carbonyl-(C_1–C_2)-alkyl.

5. A compound according to claim **1**, of the formula

$$[(i\text{—}C_8H_{17}O\text{—}C(O)\text{—}CH_2\text{—}S)_2\text{—}CH\text{—}(CH_3)\text{-}_2C\text{—}S]_2$$

6. A lubricant composition comprising a major proportion of an oil of lubricating viscosity and in an amount to provide extreme pressure properties of the compound of claim **1**.

4,248,724

GLYCOL ETHER/SILOXANE POLYMER PENETRATING AND LUBRICATING COMPOSITION

Douglas H. MacIntosh, P.O. Box 1512, Sedona, Ariz. 86336

Filed Oct. 9, 1979, Ser. No. 83,073

Int. Cl.[3] C10M *3/14, 3/44*

U.S. Cl. 252—49.6 4 Claims

1. A penetrating and lubricating composition consisting essentially of:

(a) from 0.7% to 1.6% by volume of a dimethyl siloxane polymer; and

(b) a glycol ether selected from the group consisting of ethers of ethylene glycol, ethers of propylene glycol, ethers of diethylene glycol, and ethers of dipropylene glycol.

4,248,725

DISPERSANTS HAVING ANTIOXIDANT ACTIVITY AND LUBRICATING COMPOSITIONS CONTAINING THEM

John Crawford, Caterham, and Geoffrey A. Hill, Hull, both of England, assignors to Chevron Research Company, San Francisco, Calif.

Filed Mar. 19, 1979, Ser. No. 21,361

Claims priority, application United Kingdom, Mar. 23, 1978, 11845/78

Int. Cl.[3] C10M *1/32*

U.S. Cl. 252—51.5 A 10 Claims

1. A lubricating oil additive providing for the release of anti-oxidants in lubricating oil compositions comprising the product obtained by reacting a substituted succinimide dispersant having free >NH groups in its molecular structure, an aldehyde and an anti-oxidant compound capable of condensing with an aldehyde and said dispersant, selected from secondary aromatic amines, wherein an aldehyde and said anti-oxidant compound are reacted in about equimolar amounts with said dispersant at a temperature in the range of about 100°–175° C. to chemically bond said anti-oxidant compound to said dispersant in a manner permitting the release of said anti-oxidant by scission of the chemical bond binding it to said dispersant at elevated temperatures.

8. A lubricating oil composition comprising a major proportion of a base oil of lubricating viscosity and from 0.1 to 20 percent lubricating oil additive according to claim 1.

4,248,726

HIGH-VISCOSITY REFRIGERATOR OIL COMPOSITIONS

Kazuo Uchinuma, Tokyo, and Umekichi Sasaki, Kawasaki, both of Japan, assignors to Nippon Oil Co., Ltd.; Mitsubishi Jukogyo Kabushiki Kaisha, both of Tokyo and Sanyo Chemical Industries, Ltd., Kyoto, all of, Japan

Filed May 5, 1978, Ser. No. 903,323

Claims priority, application Japan, May 13, 1977, 52-55166

Int. Cl.[3] C10M *3/20, 3/18, 3/14*

U.S. Cl. 252—52 A 7 Claims

1. A high-viscosity refrigerator oil composition consisting essentially of:

(A) 90–99.9% by weight of a polyglycol oil having a kinematic viscosity of 50–200 cSt at 98.9° C. and a viscosity index of at least 150, represented by the following formula

$$R_1—O—(R_2O)_m—R_3]_n$$

wherein R_1 and R_3 are each a hydrogen atom, hydrocarbon radical or fatty acyl group and they may be identical with, or different from, each other, R_2 is an alkylene group, n is an integer of 1–6 and mxn equals at least 30, and

(B) 0.1–10% by weight of at least one member selected from the group consisting of (1) glycidyl ether epoxy compounds, (2) epoxidized fatty acid monoesters and (3) epoxidized vegetable oils.

4,248,727

DIELECTRIC CERAMICS

Syunichiro Kawashima, Nishinomiya; Masamitsu Nishida; Ichiro Ueda, both of Osaka, and Hiromu Ouchi, Toyonaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Dec. 4, 1979, Ser. No. 99,724

Claims priority, application Japan, Dec. 4, 1978, 53-150230; Dec. 4, 1978, 53-150231

Int. Cl.[3] H01B *3/12*

U.S. Cl. 106—46 1 Claim

1. A dielectric ceramic consisting essentially of a solid solution represented by the formula

$$(1-w)\,(xBaO.yNa_2O.zNb_2O_5)+wMeO.ZrO_2$$

wherein Me denotes Ca or Sr, $0.593 \leqq x \leqq 0.762$, $0.04 \leqq y \leqq 0.13$, $0.174 \leqq z \leqq 0.32$, $x+y+z=1$, and $0 < w \leqq 0.95$ and having a dielectric constant from 28 to 40, Q value of 2700 to 4500 and a temperature coefficient of resonant frequency of +63 to −43 ppm/°C.

4,248,728

LIQUID SCOURING CLEANSER

Robert L. Puryear, Cincinnati, Ohio, assignor to Chemed Corporation, Cincinnati, Ohio

Filed Feb. 28, 1979, Ser. No. 16,310

Int. Cl.[3] C11D *7/56*

U.S. Cl. 252—103 6 Claims

1. A general purpose scouring cleanser in cream form consisting of:

	Wt. %
Water, to make balance of 100%	
Colloidal magnesium aluminum silicate, about	1–5
Alkali, about	1–5
Sodium aluminum silicate, about	10–50
Abrasive, about	0–25
Chlorine-stable anionic surfactant, about	0.5–2.0
Bleach (dry basis), about	0–2
Sodium hexametaphosphate, about	0–15

said colloidal magnesium aluminum silicate being a member selected from the group consisting of:

hectorites, modified hectorites, smectites, montmorillonite, bentonite, volchonskoite, nontronite, beidellite, saponite, or sauconite;

said alkali being sufficient to maintain the pH in the range of 11–14;

said sodium aluminum silicate being a water insoluble crystallizing aluminosilicate ion exchange material of the formulas $Na_{12}[AlO_2SiO_2]_{12}xH_2O$ wherein x is an integer of from about 20 to about 30;

said abrasive being a member selected from the group consisting of quartz, pumice, pumicite, titanium dioxide, silica sand, calcium carbonate, zirconium silicate, diatomaceous earth, whiting, or feldspar, and having a particle size diameter ranging from about 1 to about 250 microns and a specific gravity of from about 0.5 to about 5.0;

said bleach being a member selected from the group consisting of;

sodium hypochlorite, potassium hypochlorite, monobasic calcium hypochlorite, dibasic magnesium hypochlorite, chlorinated trisodium phosphate dodecahydrate, potassium dichloroisocyanurate, sodium dichloroisocyanurate, or N-chlorosulfamide.

4,248,729
DETERGENCY BOOSTER

Donn N. Rubingh, and Theodore C. Stephens, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 905,714, May 15, 1978, abandoned. This application Dec. 13, 1978, Ser. No. 968,897

Int. Cl.[3] **C11D** *1/83*

U.S. Cl. 252—174.22 **2 Claims**

1. A process for laundering fabrics, comprising agitating said fabrics with an aqueous laundering liquor consisting essentially of:

(a) from about 0.075% to about 0.20% by weight of said liquor of a detergency booster which is an ethoxylated primary hydrocarbon alcohol having an average hydrocarbon chain length in the range of about C_{12}–C_{13} and an average degree of ethoxylation of about 3;

(b) from about 0.02% to about 0.12% by weight of said liquor of a material selected from the group consisting of nonionic and anionic detersive surfactants, and mixtures thereof; and

(c) the balance of said laundering liquor is water; said laundering liquor being at a temperature of about 70° C., or higher, and thereafter rinsing said fabrics with water at temperatures of about 66° C., or lower.

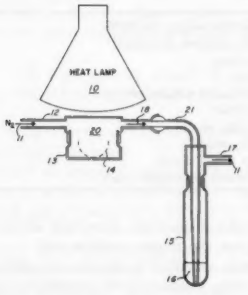
4,248,730
EVAPORATION-BASED GE/^{68}GA SEPARATION

Saed Mirzadeh, Albuquerque; Richard E. Whipple, Los Alamos; Patrick M. Grant, Los Alamos, and Harold A. O'Brien, Jr., Los Alamos, all of N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 13, 1979, Ser. No. 74,855

Int. Cl.[3] **C09K** *3/00, 11/04*

U.S. Cl. 252—301.1 R **8 Claims**



1. A method for separating ^{68}Ga in ionic form from ^{68}Ge which comprises (a) forming a strong aqueous, about 6 M HCl solution of ^{68}Ge and ^{68}Ga in secular equilibrium the activity of said solution being in the range of 10^{-5} to about 5 mCi, in a container (b) evaporating said solution to dryness, and (c) leaching said ^{68}Ga from the container wall after said evaporation is completed.

4,248,731
THERMOLUMINESCENT MATERIAL

Mutsuo Takenaga, Katano; Osamu Yamamoto, and Tadaoki Yamashita, both of Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Continuation of Ser. No. 835,816, Sep. 22, 1977, abandoned. This application Jan. 29, 1979, Ser. No. 7,763

Claims priority, application Japan, Sep. 22, 1976, 51-113933

Int. Cl.[2] **C09K** *11/28*

U.S. Cl. 252—301.4 R **4 Claims**

1. A thermoluminescent material for a thermoluminescent radiation dosimeter, consisting essentially of lithium tetraborate ($Li_2O.2B_2O_3$) as a base material and copper as an activator in the range of 0.002 to 1.0 wt% on said base material, said thermoluminescent material exhibiting a thermoluminescent emission spectrum characterized by a main emission peak at 368 mμ and being prepared by mixing said base material and activator, firing said mixture at 950° C., rapidly cooling to form a glassy material and then reheating said glassy material to assure complete crystallization.

4,248,732
LASER PHOSPHATE GLASS COMPOSITIONS

John D. Myers, Perrysburg, Ohio, and Charles S. Vollers, Blissfield, Mich., assignors to Kigre, Inc., Toledo, Ohio

Continuation-in-part of Ser. No. 577,331, May 14, 1975, Pat. No. 4,075,120. This application Feb. 14, 1978, Ser. No. 877,606

Int. Cl.[2] **C03C** *3/16;* **C09K** *11/42, 11/46, 11/10*

U.S. Cl. 252—301.6 P **15 Claims**

1. A laser glass consisting essentially of the following ingredients in mole percentages:

Ingredient	Mole Percent	Weight %
P_2O_5	35 to 65	
R_2O_3	0.01 to 15	
RO	5 to 30	
R_2O	5 to 40	
Nd_2O_3	0.01 to 7	
Solarization inhibitor		to limit of solubility

wherein R_2O_3 is selected from the group consisting of Al_2O_3, La_2O_3, Y_2O_3, Tm_2O_3, B_2O_3, Er_2O_3 and mixtures thereof, wherein RO is ZnO and mixtures of ZnO with alkaline earth oxides selected from the group consisting of PaO, BeO, MgO, SrO, and CaO, wherein R_2O is selected from the alkali metal oxide group consisting of Li_2O, K_2O, Na_2O, Rb_2O, and mixtures thereof, and wherein the solarization inhibiting oxide is present in an amount sufficient to prevent discoloration, and wherein said solarization inhibiting oxide is selected from the group consisting of $Nb_2O_5SiO_2$, TiO_2, CeO, and Sb_2O_3 and mixtures thereof.

4,248,733
MATERIAL AND METHODS FOR OIL SPILL CONTROL AND CLEANUP AND EXTINGUISHING PETROLEUM FIRES

John B. States, Sr., Parkesburg, Pa., assignor to Chandler Associates, Inc., Alexandria, Va.

Continuation-in-part of Ser. No. 955,680, Oct. 30, 1978, abandoned. This application Aug. 2, 1979, Ser. No. 63,298

Int. Cl.[3] **B01J** *13/00*

U.S. Cl. 252—355 **12 Claims**

1. A dispersal medium for cleaning of oil spills and the like comprising a mixture of:

a household liquid detergent mixture of linear alkylate sulfonate, non-ionic detergent and lauric superamide as the major quantitative part;

less than 2% by weight of eucalyptus oil;

between 3% and 10% by weight of bovine urine;

between 3% and 10% by weight of alfalfa;

and less than ¼% by weight of vitamin B-6.

4. A method for cleaning oil spills and the like comprising the application of the following mixture to said oil spill:

a household liquid detergent mixture of linear alkylate sulfonate, non-ionic detergent and lauric superamide as the major quantitative part;

less than 2% by weight of eucalyptus oil;

between 3% and 10% by weight of bovine urine;

between 3% and 10% by weight of alfalfa;

and less than ¼% by weight of vitamin B-6.

5. A method for extinguishing a fire, fueled at least in part by petroleum, comprising:

providing under pressure a mixture of water and a fire extinguishing medium;

feeding said mixture through a hose and nozzle;

and directing said mixture as it emanates from said nozzle toward a fire and scanning said fire to distribute said mixture throughout the area of said fire;

said fire extinguishing medium comprising a mixture of a household liquid detergent mixture of linear alkylate sulfonate, non-ionic detergent and lauric superamide as the major quantitative part, less than 2% by weight of eucalyptus oil, between 3% and 10% by weight of bovine urine, between 3% and 10% by weight of alfalfa, and less than ½% by weight of vitamin B-6.

4,248,734

PRESERVATION OF DOUGLAS FIR NEEDLES

Cesar Romero-Sierra, Bath, and John C. Webb, Kingston, both of Canada, assignors to Queen's University at Kingston, Kingston, Canada

Filed Jan. 14, 1980, Ser. No. 112,147
Claims priority, application Canada, Jan. 30, 1979, 320466
Int. Cl.³ A01H *1/00*
U.S. Cl. 252—400 R **4 Claims**

1. A solution, for the preservation of naturally coloured needles or branches of Douglas Fir substantially without shedding therefrom, consisting essentially of (in amounts per liter):

300–500 ml water
200–300 ml ethyl alcohol
0–75 ml ethylene glycol
50–75 ml propionic acid
0–20 ml glycerin
100–150 ml formalin
50–175 ml propylene glycol
40–75 gms citric acid
1–7 gms magnesium sulphate
15–25 gms cupric sulphate
5–10 gms sodium sulphite
0–10 gms seaweed extract.

4,248,735

TREATMENT OF SILICA

Max P. McDaniel, and Melvin B. Welch, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 857,552, Dec. 5, 1977, abandoned. This application Jun. 1, 1979, Ser. No. 44,809
Int. Cl.³ B01J *31/02, 31/12, 27/02, 27/06*
U.S. Cl. 252—428 **48 Claims**

1. A method for producing a catalyst comprising subjecting a silica-containing support at an elevated temperature to a treating ambient selected from (1) carbon monoxide, (2) a halogen-containing component selected from bromine, iodine, HBr, HI, organic bromides, and organic iodides, which halogen-containing component also either contains air or is followed by air or (3) a carbon, oxygen and sulfur-containing composition, thereafter incorporating a chromium compound under anhydrous conditions to thus form said catalyst and thereafter activating said catalyst in an oxygen ambient.

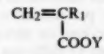
4,248,736

FIBROUS ADSORBENT FOR HEMOPERFUSION

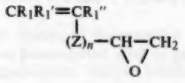
Yoshio Fuchigami, Okayama, and Toshihide Nakashima, Kurashiki, both of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Jan. 2, 1979, Ser. No. 258
Claims priority, application Japan, Jan. 18, 1978, 53-4876
Int. Cl.³ B01D *11/04*
U.S. Cl. 252—428 **8 Claims**

1. An adsorbent for hemoperfusion which comprises a woven or knitted fibrous structure of activated carbon with a bulk density of at least 0.25 g/cc, said activated carbon having been derived from a fibrous precursor selected from the group consisting of regenerated cellulose, polyacrylonitrile and a thermosetting polymer, and having at least one coating thereon of a hydrophilic, blood-compatible, film-forming copolymer prepared by polymerization of at least one monomeric acrylate or methacrylate represented by the formula:



wherein R_1 is hydrogen or methyl; and Y is a radical selected from the group consisting of $—R_2—OR_3$ and $—R_2—NR_3R_3'$, wherein R_2 is a divalent alkylene radical containing 2 to 3 carbon atoms or a poly (oxyalkylene) radical, and R_3 and R_3', respectively, are hydrogen or an alkyl group containing 1 to 3 carbon atoms, with a copolymerizable monomer containing an epoxy radical therein represented by the formula:



wherein each of R_1, R_1', and R_1'' independently is hydrogen or methyl; Z is a divalent radical selected from the group consisting of $—COOR_2$ and $—CH_2—OCH_2—$, wherein R_2 is a divalent alkylene radical containing 1 to 3 carbon atoms or a poly-(oxyalkylene) radical; and n is 0 or 1; the copolymerizable monomer being present therein in the range of from 0.1 to 10% based on the weight of total monomers.

4,248,737

TECHNIQUE TO REDUCE THE ZEOLITE MOLECULAR SIEVE SOLUBILITY IN AN AQUEOUS SYSTEM

Santi Kulprathipanja, Hoffman Estates, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Jun. 15, 1979, Ser. No. 48,955
Int. Cl.³ B01J *20/18, 20/22*
U.S. Cl. 252—430 **13 Claims**

1. A method for the manufacture of an adsorbent comprising crystalline aluminosilicate and a water permeable organic polymer binder suitable for use in a process for the separation of a component from a feed mixture comprising an aqueous solution of a mixture of components, which method comprises:

(a) mixing together a powder of said crystalline aluminosilicate, a powder of said binder and a liquid organic solvent to form a malleable mixture;

(b) forming said malleable mixture into discrete formations;

(c) removing said solvent from said formations to obtain hard dry formations; and

(d) breaking said hard dry formations into particles of desired sizes.

7. The method of claim 1 further characterized in that said water permeable organic polymer comprises a cellulose ester or cellulose nitrate.

8. The method of claim 1 further characterized in that said crystalline aluminosilicate is selected from the group consisting of X zeolites and Y zeolites.

4,248,738

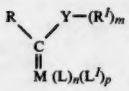
OLEFIN DISPROPORTIONATION CATALYST

Dennis S. Banasiak, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 20, 1979, Ser. No. 58,985
Int. Cl.² B01J *31/02, 31/12*
U.S. Cl. 252—431 R **10 Claims**

1. A catalyst composition consisting essentially of

(1) at least one neutral carbene complex having the general formula

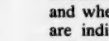


wherein R is an aryl or substituted aryl radical containing 6 to 30 carbon atoms per radical wherein the substituted aryl radical can have one or more substituents each of which can be the same or different and selected from the group consisting of halides, alkoxides and alkyl radicals containing 1 to 20 carbon atoms per radical; R^I is selected from the group consisting of alkyl, cycloalkyl, aryl, substituted aryl, trialkylsilyl, and triarylsilyl radicals containing 1 to 30 carbon atoms per radical with the aryl substituents being the same as for the substituted aryl of R; Y is O, Se, S, N, or P; m is 1 when Y is O, Se, or S and 2 when Y is N or P; M is tungsten or rhenium; each L is individually selected from CO, NO, PF_3, PCl_3, or pyridine; L^J is cyclopentadienyl; p is 0 or 1; and n is 5 when p is 0 or 2 when p is 1,

(2) at least one halogenated promoter selected from the group consisting of fully halogenated methanes and halogenated unsaturated organo compounds having 3 to 30 carbon atoms per molecule, no hydrogens other than those bonded to the ring carbons of an aromatic ring, and a fully halogenated alkyl radical bonded to the carbon of an olefinic carbon-carbon double bond, a ketone carbonyl double bond, or an aromatic carbon-carbon double bond and wherein the halogens of the halogenated promoters are individually selected from chlorine, bromine, and iodine, and

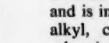
(3) at least one tin promoter selected from

(a) tetraorganotin compounds having 4 to 40 carbon atoms per molecule and the formula



wherein each R^{II} contains 1 to 10 carbon atoms per radical and is individually selected from the group consisting of alkyl, cycloalkyl, aryl, and substituted aryl radicals wherein the substituents are individually selected from alkyl or alkyoxy radicals or chloride or bromide, and

(b) organotrihalotin compounds having 1 to 10 carbon atoms per molecule and the formula



wherein R^{II} is as defined above and wherein each X is individually selected from the group consisting of chloride, bromide, and iodide,

wherein said neutral carbene complex of said halogenated promoter, and said tin promoter are present in such amounts as to have a catalytic effect upon the disproportionation of 1-pentene.

4,248,739

STABILIZED PILLARED INTERLAYERED CLAYS

David E. W. Vaughan, Columbia; Roger J. Lussier, and John S. Magee, Jr., both of Ellicott City, all of Md., assignors to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 885,408, Mar. 10, 1978, Pat. No. 4,176,090, which is a continuation-in-part of Ser. No. 805,672, Jun. 13, 1977, abandoned, which is a continuation-in-part of Ser. No. 704,358, Jul. 12, 1976, abandoned, which is a continuation-in-part of Ser. No. 633,053, Nov. 18, 1975, abandoned. This application Sep. 4, 1979, Ser. No. 71,957

Int. Cl.³ B01J *20/16, 21/16*

U.S. Cl. 252—455 R **11 Claims**

1. In a method for preparing a pillared interlayered smectite clay product wherein a smectite clay is reacted with a mixture of a polymeric cationic hydroxy metal complex and water to obtain a pillared, interlayered smectite having greater than 50 percent of its surface area in pores of less than 30 A° in diameter after dehydration, the improvement comprising reacting said smectite with a high molecular weight cationic hydroxy metal complex and copolymers thereof having a molecular weight of from about 2000 to 20,000.

3. The method of claim **1** wherein said high molecular weight complex is obtained by reacting a polymeric cationic hydroxy zirconium complex having an initial molecular weight of from about 600 to 1200 at a pH of from about 0.5 to 2.0 for about 0.1 to 24 hours.

4. The method of claim **1** wherein said high molecular weight complex is obtained by reacting a polymeric cationic hydroxy aluminum complex having an initial molecular weight of from about 600 to 1200 at a pH of from about 3.5 to 6 for about 0.1 to 24 hours.

4,248,740

PROCESS FOR PREPARING SILVER-SUPPORTED CATALYST FOR THE PRODUCTION OF ETHYLENE OXIDE

Masashi Mitsuhata; Toshihiko Kumazawa, both of Yokohama, and Isamu Kiguchi, Zushi, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co. Ltd., Osaka, Japan

Filed Jun. 28, 1978, Ser. No. 920,117

Claims priority, application Japan, Jul. 1, 1977, 52-77752

Int. Cl.³ B01J *23/48*

U.S. Cl. 252—463 **9 Claims**

1. A process for preparing a silver-supported catalyst for the production of ethylene oxide by catalytic vapor phase oxidation of ethylene with molecular oxygen, the catalyst being composed of a porous inorganic carrier and fine particles of silver dispersed and deposited on its external surface and the internal wall surface of its pores, which comprises impregnating the porous inorganic carrier with a solution of a silver compound containing a reducing compound, said solution being

(A) a solution comprising

(1) at least one alkanolamine selected from the group consisting of monoethanolamine, di-ethanolamine and triethanolamine,

(2) at least one silver compound selected from the group consisting of silver nitrate, silver carbonate, silver acetate, silver lactate, silver succinate and silver glycolate and

(3) at least one solvent selected from the group consisting of water, monoethylene glycol, di-ethylene glycol and triethylene glycol,

(B) a solution comprising

(1) formaldehyde

(2) silver nitrate and

(3) water, or

(C) a solution comprising

(1) at least one acid amide selected from the group consisting of formamide and acetamide,

(2) silver nitrate and

(3) at least one solvent selected from the group consisting of monoethylene glycol, di-ethylene glycol, triethylene glycol, tri-methylene glycol, monopropylene glycol, methyl cellosolve and methyl carbitol,

subjecting the impregnated product to a reducing treatment at a temperature of 50° to 200° C. to deposit metallic silver on the external surface of the carrier and the internal wall surface of its pores, washing the silver-supported carrier with water, a lower alcohol or both, drying it at a temperature of 90° to 100° C., until the silver-supported carrier is dried, impregnating the dried product with a solution containing a promoter, and then evaporating the liquid ingredients.

4,248,741

METHOD OF MAKING CATALYSTS FOR THE PRODUCTION OF ETHYLENE OXIDE

Walter L. Wernli; William E. Fry, both of Angleton, and Steve F. Janda, Brazoria, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 29, 1979, Ser. No. 43,414
Int. Cl.[3] B01J *21/04, 23/02, 23/50*
U.S. Cl. 252—463 4 Claims

1. A process for making an improved silver catalyst for use in producing ethylene oxide by reacting ethylene with oxygen in the vapor phase at an elevated temperature in the presence of said catalyst, which comprises,

(1) Impregnating a porous alumina support by

(a) contacting said support with an aqueous solution of a silver salt, and a barium salt as promoter while

(b) evacuating to insure substantially complete penetration of said porous support.

(2) Drying said impregnated support by heating under vacuum.

(3) Impregnating said dry support with a reducing agent by,

(a) contacting said support with a reducing agent while under

(b) vacuum to insure substantially complete penetration of said porous support, and

(4) Heating said support to reduce said silver salt on said support to silver metal.

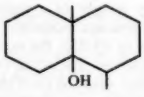
4,248,742

USE OF A HYDROXYLIC BICYCLIC DERIVATIVE AS PERFUMING INGREDIENT

Sina D. Escher, Le Lignon, and Anthony F. Morris, Gingins, both of Switzerland, assignors to Firmenich SA, Geneva, Switzerland

Filed Sep. 14, 1979, Ser. No. 75,416
Int. Cl.[3] C11B *9/00*
U.S. Cl. 252—522 R 6 Claims

1. Process for imparting, enhancing or modifying the ambery odorous note in a perfume composition which comprises adding thereto a compound of formula



at a concentration of from about 1 to 100 parts per million by weight based on the total weight of the thus obtained material.

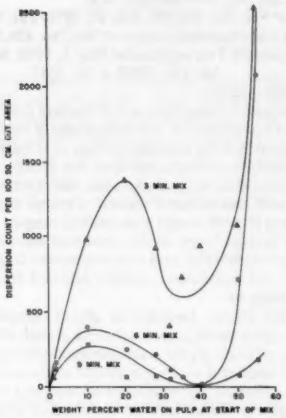
4,248,743

PREPARING A COMPOSITE OF WOOD PULP DISPERSED IN A POLYMERIC MATRIX

Lloyd A. Goettler, Akron, Ohio, assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 13,846, Feb. 22, 1979, abandoned, which is a continuation of Ser. No. 816,606, Jul. 18, 1977, abandoned. This application Aug. 17, 1979, Ser. No. 67,587
Int. Cl.[3] C08L *1/02*
U.S. Cl. 260—17.4 BB 9 Claims

1. The method of making a composite of polymeric matrix and wood pulp which comprises masticating such proportion of polymeric matrix including massed polymer as provides a continuous phase, agglomerated wood pulp having a tensile strength below about 10 kg./cm.[2] regardless of the direction of measurement and such amount of water as to provide the aforesaid tensile strength, wherein the polymeric matrix is



present in an amount of at least 50 parts by weight based on 100 parts by weight of dry wood pulp.

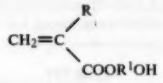
4,248,744

THERMOSETTING POWDERS

Edward J. Masar, Sylvania; David J. Oberg, Perrysburg, both of Ohio, and Ralph A. Williams, Placentia, Calif., assignors to Inmont Corporation, New York, N.Y.

Continuation of Ser. No. 914,653, Jun. 12, 1978, abandoned, which is a continuation of Ser. No. 743,682, Nov. 22, 1976, abandoned. This application Aug. 20, 1979, Ser. No. 67,966
Int. Cl.[3] C08L *5/00*
U.S. Cl. 260—17.4 SG 11 Claims

1. A powder suitable for application by electrostatic powder spray gun to conductive surfaces, said powder being comprised of a mixture of (A) an acrylic polymer (B) a blocked polyisocyanate, and (C) 2 to 15% by weight, based on film forming solids, of sucrose benzoate, said acrylic polymer being a copolymer of a mixture of (a) 0 to 25% by weight, of a monomer of the group consisting of styrene, α-methyl styrene and vinyl toluene, (b) 3 to 25% by weight of an active hydrogen containing monoethylenically unsaturated compound of the formula



where R is hydrogen or methyl and R^1 is an alkylene radical containing 2 to 4 carbon atoms, (c) 45 to 97% by weight of a lower alkyl ester of methacrylic acid and (d) 0 to 30% by weight of a lower alkyl ester of acrylic acid, said acrylic resin being further characterized as having a glass transition temperature between 45° C. and 95° C., and wherein the ratio of (A) and (B) is substantially 1:1 on the basis of equivalents of hydroxyl groups in (A) to isocyanate groups in (B).

4,248,745

WATER SOLUBLE INSULATING VARNISH

Deno Laganis, Schenectady, N.Y., assignor to Schenectady Chemicals, Inc., Schenectady, N.Y.

Division of Ser. No. 709,107, Jul. 27, 1976, Pat. No. 4,179,420, which is a continuation-in-part of Ser. No. 624,569, Oct. 21, 1975, abandoned. This application May 1, 1979, Ser. No. 35,010

Int. Cl.[3] C09D *3/64, 3/68*

U.S. Cl. 260—22 D **11 Claims**

1. A polyester comprising an oil-free and fatty-acid reaction product of component A and component B wherein

component A is the reaction product of at least one aromatic dicarboxylic acid selected from the group consisting of isophthalic acid, terephthalic acid, benzophenone dicarboxylic acid and mixtures thereof, wherein the aromatic dicarboxylic acid is used in an amount ranging from 35 to 85 mole percent based on the combined amounts of the aromatic dicarboxylic acid and component B; and of at least one polyhydric alcohol selected from the group consisting of neopentyl glycol, 1,4-butylene glycol, dimethylol hydantoin, dipropylene glycol, ethylene glycol, diethylene glycol, propylene glycol, cyclohexane dimethanol, hydrogenated bisphenol A, hydroquinone di-(beta-hydroxyethyl) ether, ethylene glycol diether of bisphenol A, and propylene glycol diether of bisphenol A; and wherein

component B is trimellitic anhydride or trimellitic anhydride admixed with material selected from the group consisting of tetrahydrophthalic acid, hexahydrophthalic acid, 3,6-endomethylene-delta^4-tetrahydrophthalic acid, adipic acid, succinic acid, azelaic acid, sebacic acid, dimerized fatty acid, maleic acid, fumaric acid, anhydrides of said acids and mixtures thereof, component B being used in an amount of 15-65 mole percent of the combined amount of aromatic dicarboxylic acid and component B;

wherein the OH/COOH ratio of the polyester is from 1:1 to 1.5:1;

wherein since B is trimellitic anhydride or a mixture containing trimellitic anhydride, the polyhydric alcohol consists essentially of a diol or mixture of diols;

wherein the polyester has an acid number of from 25 to 90 measured on a sample diluted to 80% solids.

4,248,746

HEAT FUSIBLE POLY(VINYL ACETATE) DISPERSIONS

Richard W. Greiner, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Jun. 22, 1979, Ser. No. 51,340

Int. Cl.[3] B41M *1/06;* **C09D** *11/08, 11/10*

U.S. Cl. 260—23 AR **15 Claims**

1. A composition of matter consisting essentially of (1) discrete solid particles of a thermoplastic polymeric material, said polymeric material having been prepared from at least 60% of vinyl acetae, said thermoplastic polymeric material having a particle diameter between about 0.05 micron to about 50 microns, said thermoplastic polymeric particles being dispersed in (2) a tackifying, cohesion-increasing material whose softening point is at or below room temperature, said polymeric material and said cohesion-increasing material being present in said composition in a ratio of polymeric material to cohesion-increasing material of between about 1:6 to about 1:1.

4,248,747

SINGLE PACKAGE ADDITIVE FOR THERMOPLASTIC FORMULATION

Paul H. Washecheck, and Ron G. Hale, both of Ponca City, Okla., assignors to Conoco, Inc., Ponca City, Okla.

Filed Aug. 3, 1979, Ser. No. 63,609

Int. Cl.[3] C08L *91/00, 93/00*

U.S. Cl. 260—23 XA **14 Claims**

1. A process for producing an improved friable composition for addition to thermoplastic formulations during extrusion comprising mixing a paraffinic hydrocarbon wax, calcium hydroxide and a fatty acid, or a calcium salt of a fatty acid while heating to a temperature of at least 150° C. thereafter adding additives and a stabilizer and thereafter cooling to recover a solid glass-like friable composition, said paraffinic hydrocarbon wax having a drop melting point of at least 43° C., an oil content of not greater than 50 percent by weight and a needle penetration value (25° C.) in the range of 1 mm to 20 mm, said fatty acid being a C_{16}–C_{24} aliphatic hydrocarbon monocarboxylic acid or mixtures thereof; said stabilizer physically blended with sufficient thermoplastic resin to support the quantity of stabilizer used, said blend being formed prior to addition to the reaction mixture.

4,248,748

HEAT-ACTIVATED ADHESIVE

Joseph M. McGrath, Maplewood, and Daryl D. Johnson, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Feb. 4, 1980, Ser. No. 118,230

Int. Cl.[3] C08L *93/04*

U.S. Cl. 260—27 R **10 Claims**

1. Heat-activated adhesive comprising (a) an acrylate polymer capable of room-temperature pressure-sensitive adhesion of at least 100 grams per centimeter width; and (b) room-temperature-solid tackifying resin that provides increased room-temperature tackiness when added in at least some amounts to said acrylate resin or natural rubber, but which is included in said heat-activated adhesive in an amount sufficient to reduce room-temperature pressure-sensitive preadhesion of the adhesive to less than the pressure-sensitive adhesion of the acrylate polymer prior to addition of the tackifying resin.

4,248,749

STRIPPING-RESISTANT ASPHALT COMPOSITIONS

Shigeyuki Hayashi, Kawasaki, and Masao Isobe, Kamakura, both of Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Filed Apr. 17, 1979, Ser. No. 30,785

Int. Cl.[3] C08L *95/00*

U.S. Cl. 260—28.5 AS **1 Claim**

1. A stripping-resistant asphalt composition comprising

(A) 100 parts by weight of a nonmaleinated asphaltic material selected from the group consisting of a non-maleinated asphalt and tar,

(b) 0.1–20 parts by weight of a maleinated organic compound having an average molecular weight of 200–10,000 and an acid value of 10–250, the maleinated organic compound being a reaction product of maleic anhydride with at least one member selected from the group consisting of liquid polybutadienes, petroleum resins, drying oils of vegetable origin and polymers thereof, low molecular-weight polymers of C_2–C_{15} straight-chain monoolefins and petroleum-derived waxes, and

(C) 500–4000 parts by weight of aggregate.

4,248,750

COMPOSITIONS FOR FORMING PEELABLE FILMS

Ichiro Murakami; Shosaku Sasaki, and Masamitsu Tanimura, all of Ichihara, Japan, assignors to Toray Silicone Company, Ltd., Tokyo, Japan

Filed May 7, 1979, Ser. No. 36,896

Claims priority, application Japan, Jun. 26, 1978, 53-76447

Int. Cl.[3] C08J *3/00*

U.S. Cl. 260—29.1 SB **4 Claims**

1. In a curable composition for forming peelable films, said composition being obtained by mixing components comprising

(a) an organopolysiloxane having a viscosity greater than 100 cP at 25° C. and having at least two silicon-bound vinyl groups per molecule,

(b) an organohydrogenpolysiloxane containing at least two silicon-bound hydrogen radicals per molecule and

(c) a catalytic amount of a metal catalyst for an addition reaction of silicon-bound vinyl groups with silicon-bound hydrogen radicals, the improvement comprising incorporating in the curable compositions

(d) at least one organopolysiloxane bearing at least one silicon-bonded radical selected from the group consisting of alcohol radicals having the formula $—R^1OH$ and polyether radicals having the formula $—(OR^1)_jOR^2$, $—(R^1O)_kR^2$, $—(R^1O)_kR^2$ or $—O(R^1O)_k—$, wherein R^1 denotes an alkylene radical, R^2 denotes a hydrogen radical or an inactivating endgroup, k is an integer greater than 2 and l is an integer greater than 1, there being in the improved composition from 1 to 40 parts by weight of component (d) for every 100 parts by weight of the total of components (a) and (b).

4,248,751

PROCESS FOR PRODUCING A SILICONE ELASTOMER EMULSION AND USE THEREOF

David N. Willing, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Aug. 31, 1979, Ser. No. 71,459

Int. Cl.³ C08J *3/00*

U.S. Cl. 260—29.2 M **15 Claims**

1. A process for producing a silicone elastomer emulsion comprising emulsifying

(A) a vinyl endblocked polydiorganosiloxane, and

(B) an organosilicon compound having silicon-bonded hydrogen atoms using water and surfactant to form an emulsion, adding a platinum catalyst, and heating the emulsion forming a latex of crosslinked silicone.

4,248,752

REFRACTORY MOLDABLE COMPOSITION

Thomas A. Myles, Prospect, Ky., assignor to The Carborundum Company, Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 656,475, Feb. 9, 1976, Pat. No. 4,174,331, which is a continuation-in-part of Ser. No. 475,214, May 31, 1974, abandoned, which is a continuation-in-part of Ser. No. 265,945, Jun. 23, 1972, abandoned. This application Jun. 28, 1979, Ser. No. 52,873

The portion of the term of this patent subsequent to Nov. 13, 1996, has been disclaimed.

Int. Cl.³ C04B *35/14*; C08L *1/04, 33/24, 1/10*

U.S. Cl. 260—29.1 R **9 Claims**

1. A refractory moldable composition consisting essentially of:

(a) from about 45 to about 65% by weight liquid vehicle;

(b) from about 21 to about 26% by weight ceramic fiber;

(c) from about 7 to about 30% by weight colloidal silica; and

(d) sufficient adhesion enhancing agent, said adhesion enhancing agent being a solid organic polymer substance containing polar groups which impart adhesive properties to the polymer, to impart an adherence value to steel of the steel plate from the mold of from about 18 to about 50 grams per square centimeter, the liquid vehicle being a non-solvent for the ceramic fiber and colloidal silica and a solvent for the adhesion enhancing agent.

4,248,753

MICHAEL ADDUCTS OF POLYMERIC MATERIALS USEFUL IN COATING APPLICATIONS

Stephen L. Buchwalter, Allison Park; Joseph F. Bosso, Lower Burrell, and Roger M. Christenson, Gibsonia, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

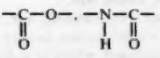
Filed Aug. 28, 1978, Ser. No. 937,386

Int. Cl.³ C08L *75/12, 63/02*

U.S. Cl. 260—29.2 TN **29 Claims**

9. An aqueous dispersion of a resinous coating composition which comprises as the resinous binder:

(A) a polymeric material containing alpha, beta-ethylenically unsaturated moieties in conjugation with carbonyl moieties selected from the class consisting of



and being substantially free of epoxy functionality reacted under conditions sufficient to form a Michael adduct with

(B) a primary and/or secondary amine which has a boiling point below 200° C.; said reaction product of (A) and (B) being at least partially neutraized with acid to provide cationic salt groups and said coating composition being electrodepositable on a substrate to form a film thereon.

4,248,754

AQUEOUS DISPERSION OF POLYMERS CONTAINING POLAR GROUPS AND AMIDE GROUPS WITH POLY(ALKYLENE OXIDE)

Susan M. Fox, Cheltenham, and David V. Gibson, North Bayswater, both of Australia, assignors to Dulux Australia Ltd, Melbourne, Australia

Filed Dec. 5, 1978, Ser. No. 967,254

Claims priority, application Australia, Dec. 23, 1977, PD2887

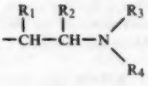
Int. Cl.³ C08L *33/26*

U.S. Cl. 260—29.6 E **7 Claims**

1. An aqueous dispersion of particles of at least one film-forming addition polymer of α,β-ethylenically unsaturated monomer at least one of which polymers comprises a proportion of polar groups selected from the group consisting of amine, ureido and thioureido groups, and characterised in that

(a) the polar groups are chosen as follows;

(i) the amine groups correspond to the general formula



where

R_1, R_2 are H, CH_3 or OH

R_3, R_4 are H or C_1-C_4 alkyl or hydroxyalkyl groups;

(ii) the ureido or thioureido groups are such that the solubility in water of a compound consisting of such a group attached directly to a methacrylyl group is at least 1% by weight at 25° C.;

(b) at least one film-forming addition polymer comprises a proportion of copolymerisable amide monomer units selected from the group consisting of acrylamide and methacrylamide; and

(c) the aqueous dispersion comprises a proportion of poly(alkylene oxide), the poly(alkylene oxide) being soluble in water and having at least 30 ethylene oxide units per molecule

and further characterised in that

(d) there is present in the dispersion at least 0.5% by weight of the total film-forming polymer of the poly(alkylene oxide) at least 0.3% of the polar groups and at least 0.3% by weight of the amide monomer units; and,

(e) the combined weights of the poly(alkylene oxide), the polar groups and the amide monomer units comprise from 1.4–9.0% by weight of the total weight of the film-forming polymer and poly(alkylene oxide).

4,248,755

COMPOSITION AND METHOD FOR SIZING TEXTILES

Charles R. Williams, Saint Louis County, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 348,435, Apr. 5, 1973, Pat. No. 4,189,416, which is a continuation-in-part of Ser. No. 92,915, Nov. 25, 1980, abandoned, which is a division of Ser. No. 885,319, Sep. 4, 1969, Pat. No. 3,585,070, which is a continuation-in-part of Ser. No. 755,726, Aug. 27, 1968, abandoned. This application Sep. 14, 1979, Ser. No. 75,433

Int. Cl.[3] C08L *35/06*

U.S. Cl. 260—29.6 TA 5 Claims

1. A method for preparing and finishing textile materials which comprises:

treating a textile material with an aqueous solution of a mixed salt of an interpolymer, said interpolymer consisting of:

(1) 1.0 molar proportion of maleic anhydride,

(2) from 0.1 to 3.0 molar proportion of styrene, and

(3) from zero to X molar proportion of vinyl acetate the total of monomers (2) and (3) being at least 1.0 molar proportion; wherein the specific viscosity of the interpolymer determined at 25° C. on a solution of 0.5 gram of interpolymer per deciliter of dimethyl formamide is in the range from about 2 to 8, and wherein

(a) from 10 to 70 percent of the free carboxyl groups of said interpolymer are combined with at least one fixed base selected from the group consisting of nonvolatile monobasic amines and alkali metal bases, and

(b) from 5 to 90 percent of the free carboxyl groups of said interpolymer are combined with at least one fugitive base selected from the group consisting of ammonia, ammonium bases and volatile monobasic amines, to provide a workable viscosity for application of the solution to the textile material and such that a total of from 20 to 100 percent of said free carboxyl groups are so combined, and '(B) heating the treated textile material at a temperature high enough to volatilize the fugitive base.

4,248,756

THERMOSETTING COATING COMPOSITIONS AND PROCESS FOR THE COATING OF SUBSTRATES

Eberhard König, Kronberg; Josef Pedain, Cologne, and Hans-Joachim Koch, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 10, 1980, Ser. No. 111,069

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1979, 2902090

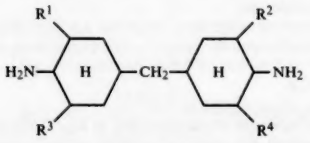
Int. Cl.[3] C08G *18/10*

U.S. Cl. 260—31.2 N 9 Claims

1. A thermosetting coating composition comprising

(A) a prepolymer having an average molecular weight of from about 1,000 to 15,000 having an average of from 2 to 4 ketoxime-blocked aromatic isocyanate groups;

(B) a cross-linking agent corresponding to the following general formula:



wherein R^1, R^2, R^3 and R^4 independently represent hydrogen or an alkyl group with 1 to 3 carbon atoms, with the proviso that if R^1 to R^4 all represent hydrogen, the amount of cis,cis-isomer in the diamine is at least 75%, wherein the equivalent ratio of blocked isocyanate groups to NH_2 groups is from about 1.35:1 to about 0.95:1 and the coating compound contains a total of not more than about 15% by weight of organic solvents and is free from aqueous polymer dispersions or aqueous polymer solutions.

4,248,757

LIQUID COATING COMPOSITIONS

John E. Sreeves, Solihull, England, assignor to British Industrial Plastics, Limited, Manchester, England

Filed Sep. 17, 1979, Ser. No. 76,362

Claims priority, application United Kingdom, Sep. 27, 1978, 38256/78

Int. Cl.[3] C08K *5/07*; C08L *67/02*

U.S. Cl. 260—32.8 N 6 Claims

1. A liquid coating composition which comprises ingredients A, B and C dissolved in the following weight proportions in an organic solvent:

A. a non-oxidizing oil-free cross-linking alkyd resin containing free carboxylic acid groups, 20–60%;

B. an alkylated amino-formaldehyde resin, 15–60%;

C. a vinyl chloride/vinyl acetate copolymer which contains free primary hydroxyl groups, free carboxylic acid groups or oxirane groups, 5–50%, the proportions of the ingredients being (by weight of resin solids) in the range C:A + B = 1:1–1:9.

4,248,758

CROSSLINKED EPDM/THERMOPLASTIC ELASTOMER BLEND

Roy F. Wright, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 10, 1978, Ser. No. 904,649

Int. Cl.[3] C08L *53/02*

U.S. Cl. 260—33.6 AQ 9 Claims

1. A now vulcanized blend comprising

(a) a thermoplastic elastomer which is a conjugated diene/monovinyl-substituted aromatic compound block copolymer with the formula ABA or $(AB\rightarrow_n Y$ wherein A represents a block of polymerized monovinyl-substituted aromatic compound, B represents a block of conjugated diene units and Y is a residual unit from a polyfunctional coupling agent or a polyfunctional initiator and n has a value of from 2 to 6, said conjugated diene having 4 or 5 carbon atoms per molecule and said monovinyl-substituted aromatic compound having 8 or 9 carbon atoms per molecule; and

(b) an EPDM polymer which was crosslinked prior to forming said blend so as to exhibit a Mooney viscosity of at least two Mooney points above that of a comparable EPDM polymer which is not crosslinked, said crosslinked EPDM polymer being present in an amount within the range of 10 to 40 weight percent based on the total weight of said EPDM polymer and said thermoplastic elastomer.

4,248,759

CONSTRUCTION ADHESIVE

David J. St. Clair, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Sep. 12, 1979, Ser. No. 74,599

Int. Cl.[3] C08K *5/01*

U.S. Cl. 260—33.6 A 10 Claims

1. A solvent-based adhesive useful for adhering foamed polystyrene sheets to substrates, said adhesive comprising:

(a) a linear or radial ABA-type block copolymer where the A blocks are polymer blocks of monoalkenyl arenes, the B blocks are polymer blocks of conjugated dienes, the weight average molecular weight of said A blocks is about 10,500 to about 12,500, and the weight percent of monoalkenyl arene in said block copolymer is between about 16 percent and about 26 percent; and

(b) a solvent comprising a mixture of 5 to 30 weight percent

of a cycloaliphatic solvent and 95 to 70 weight percent of a paraffinic or isoparaffinic solvent.

4,248,760

METHOD OF OBTAINING COMPOSITE MATERIALS AND PRODUCTS, PARTICULARLY FOR CONSTRUCTION AND BUILDING PURPOSES, BASED ON UREA-FORMALDEHYDE RESINS BY ADDITION OF PHOSPHOGYPSUM

Yordan T. Simeonov; Valeri M. Cheshkov, and Georgi Z. Zahariev, all of Sofia, Bulgaria, assignors to Centralna Laboratoria Po Physiko-Chimicheska Mechanika pri Ban, Sofia, Bulgaria

Continuation-in-part of Ser. No. 735,283, Oct. 26, 1976, abandoned. This application Jul. 13, 1979, Ser. No. 57,546
Claims priority, application Bulgaria, Oct. 31, 1975, 31382
Int. Cl.³ C08L *61/24*
U.S. Cl. 260—39 SB **4 Claims**

1. A method for curing urea-formaldehyde resins for obtaining composite materials and products for use in construction and for building purposes which comprises adding to said resins, phosphogypsum in the form of calcium sulfate dihydrate, $CaSO_4.2H_2O$, containing from 0 up to 40 weight percent of free water, said phosphorgypsum being added in from 30 up to 90 weight percent of the total composition of resin-phosphogypsum.

4,248,761

METHOD OF PRODUCING IMPROVED VINYL CHLORIDE PLASTISOL COATING COMPOSITIONS

Edwin P. Plueddemann, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 947,324, Oct. 2, 1978. This application Jan. 30, 1980, Ser. No. 116,714
Int. Cl.³ C08K *3/00, 3/10*
U.S. Cl. 260—42 **2 Claims**

1. A method of producing a resinous vinyl chloride polymer based coating composition having improved adhesion to substrates, comprising combining

(A) a dispersion of resinous vinyl chloride polymer, containing at least 75 mole percent vinyl chloride monomer units, in plasticizer,

(B) a product of hydrolysis of an amino-functional organotrialkoxysilane with at least 0.5 moles of water per mole of the silane which product is devolatilized of essentially all substances boiling below 150° C. at atmospheric pressure, and

(C) a filler,

to form a mixture consisting essentially of (A), (B) and (C), the mixture containing 0.1 to 2 percent by weight of (B) based on the combined weights of (A), (B) and (C) the aminofunctional organotrialkoxysilane having the general formula

$$(RO)_3SiCH_2CH_2CH_2NH(CH_2CH_2NH)_xH$$

wherein

R is a monovalent alkyl radical of from 1 to 3 inclusive carbon atoms, and

x is zero or 1.

2. The method as recited in claim 1 wherein the filler is aluminatrihydrate or calcium carbonate.

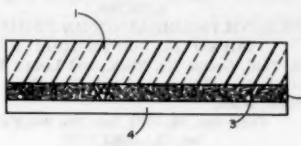
4,248,762

PRESSURE SENSITIVE PRODUCTS WITH DECORATIVE APPEARANCE

Walter J. Hornibrook, Newburgh, and Ronald A. Lombardi, New Windsor, both of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 816,236, Jul. 18, 1977. This application Apr. 5, 1978, Ser. No. 893,926
Int. Cl.³ C08K *3/08*
U.S. Cl. 260—42.22 **7 Claims**

1. In combination, a pressure sensitive adhesive with nonleafing metallic flakes having a predominant particle size of from 200 to 60 mesh homogeneously dispersed throughout said adhesive in an amount of from at least about 5% to about a maximum of about 20%, by weight of adhesive, to render a



plastic film laminate containing a layer of said adhesive initially repositionable when applied to a substrate and to confer increased adhesion for said laminate after sufficient pressure is applied to the laminate to bond it to the substrate.

4,248,763

FLUORINE-CONTAINING RESIN COMPOSITION HAVING IMPROVED THERMAL STABILITY

Tatsushiro Yoshimura, Takatsuki, and Shigetake Tominaga, Ibaraki, both of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Jul. 9, 1979, Ser. No. 55,707
Claims priority, application Japan, Jul. 22, 1978, 53/89609; Mar. 28, 1979, 54/37588
Int. Cl.³ C08K *5/40, 5/39, 5/37*
U.S. Cl. 260—42.22 **9 Claims**

1. A melt-processable fluorine-containing resin composition having an improved thermal stability which comprises (A) a melt-processable fluorine-containing resin selected from the group consisting of a tetrafluoroethylene copolymer, chlorotrifluoroethylene homopolymer, a chlorotrifluoroethylene copolymer, vinylidene fluoride homopolymer and a vinylidene fluoride copolymer, and a stabilizing amount of (B) a mixture, as a thermal stabilizer, of (a) an amine anti-oxidant, (b) an organosulfurous compound and at least one member selected from the group consisting of (c) carbon black and (d) a metal powder of Group VIII of the Periodic Table.

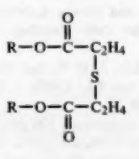
4,248,764

COLORABLE, PEROXIDE CURABLE CHLORINATED POLYMER

Upen I. Vaidya, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 19, 1979, Ser. No. 4,916
Int. Cl.³ C08K *5/36*
U.S. Cl. 260—42.33 **12 Claims**

1. A heat-resistant, curable chlorinated polymer composition capable of being colored which comprises a chlorinated polymer selected from the group consisting of chlorinated polyethylene or chlorosulfonated polyethylene containing from about 25–45 weight percent chlorine and having incorporated therein from about 1.5–4 parts per 100 parts chlorinated polymer of each of the antioxidants thiodiethylenebis[3,5-di-t-butyl-4-hydroxy hydrocinnamate] and a dialkylthiodipropionate of the formula:



where R is an alkyl group of 6–24 carbon atoms, and an organic peroxide curing agent.

8. A curable composition of claim 1 wherein the chlorinated polymer contains up to about 10 percent by weight of total

polymer of an amorphous ethylene, propylene, nonconjugated diene copolymer.

4,248,765

SURFACE POLYMERIZATION ON PIGMENTS FOR IMPROVED DISPERSIBILITY

Arvind S. Patil, Grosse Ile, Mich., and Lowell E. Netherton, Summit, N.J., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Dec. 14, 1978, Ser. No. 969,490
Int. Cl.³ C08J *3/20*
U.S. Cl. 260—42.53 **10 Claims**

1. A method for coating a pigment, comprising adsorbing a monomer on the surface of the pigment and thereafter polymerizing the monomer on the pigment surface by the addition thereto of a coreactant, wherein said monomer-coreactant system is selected from the group consisting of (a) urea-formaldehyde, (b) glycerol-phthalic anhydride, and (c) dicarboxylic acid-amine.

4,248,766

DIDODECYLAMMONIUM BETA-OCTAMOLYBDATE AND COMPOSITION CONTAINING SAME

William J. Kroenke, Brecksville, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Jun. 18, 1979, Ser. No. 49,254
The portion of the term of this patent subsequent to Oct. 11, 1994, has been disclaimed.
Int. Cl.³ C07C *11/00*; C08K *5/32*
U.S. Cl. 260—45.75 R **4 Claims**

1. Didodecylammonium beta-octamolybdate characterized by major x-ray diffraction peaks at "d" spacings of 14.3A, 10.4A, 9.41A and 7.10A.

2. A smoke retarded composition comprising a vinyl chloride or vinylidene chloride polymer together with a smoke retardant amount of didodecylammonium beta-octamolybdate characterized by major x-ray diffraction peaks at "d" spacings of 14.3A, 10.4A, 9.41A, and 7.10A.

4,248,767

DODECYLAMMONIUM ALPHA-OCTAMOLYBDATE AND COMPOSITION CONTAINING SAME

William J. Kroenke, Brecksville, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Jun. 18, 1979, Ser. No. 49,255
The portion of the term of this patent subsequent to Oct. 11, 1994, has been disclaimed.
Int. Cl.³ C07C *11/00*; C08K *5/32*
U.S. Cl. 260—45.75 R **4 Claims**

1. Dodecylammonium alpha-octamolybdate characterized by major X-ray diffraction peaks at "d" spacings of 14.0Å, 9.21Å, 6.78Å and 3.06Å.

2. A smoke retarded composition comprising a vinyl chloride or vinylidene chloride polymer together with a smoke retardant amount of the amine molybdate of claim 1.

4,248,768

SILOXANE ELASTOMERS CONTAINING MANGANOUS OXIDE

Ronald M. Fraleigh, and James A. Marinik, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Mar. 2, 1979, Ser. No. 16,870
Int. Cl.³ C08K *3/22*
U.S. Cl. 260—45.75 R **8 Claims**

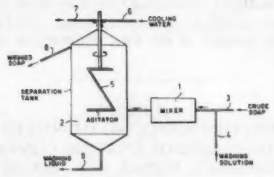
1. A composition comprising 100 parts by weight of polydiorganosiloxane, wherein each organic radical is selected from the group consisting of methyl, vinyl, 3,3,3-trifluoropropyl, and phenyl, there being up to 2 percent vinyl radicals, up to 50 percent 3,3,3-trifluoropropyl radicals, and up to 10 percent phenyl radicals based on the total number of organic radicals in the polydiorganosiloxane and from 1.98 to 2.002 organic radicals per silicon atom in the polydiorganosiloxane, from 10 to 100 parts by weight of reinforcing silica filler treated to prevent crepe hardening, and from 0.1 to 5 parts by weight of manganous oxide, the particles of which have a maximum dimension of less than 15 micrometers.

4,248,769

METHOD FOR WASHING OF CRUDE TALL OIL SOAP FROM THE SULFATE PULPING PROCESS

Ake A. Johansson, Meyrin, Switzerland, assignor to Linotek Oy, Jarvenpaa, Finland

Filed Mar. 13, 1979, Ser. No. 20,016
Claims priority, application Finland, Apr. 5, 1978, 781051
Int. Cl.³ C09F *1/00*; D21C *11/00*
U.S. Cl. 260—97.7 **3 Claims**



1. A method for washing crude soap from the sulphate cellulose process using alkaline mother liquor from tall oil cooking as washing liquid, comprising mixing the crude soap and the washing liquid vigorously at the temperature of 60°–80° C. that they have when they are coming from said sulphate cellulose process, transferring the mixture thus obtained into a separation tank, effecting separation between soap and washing liquid in the tank by a combined agitation and cooling operation at a temperature of 40°–50° C., whereby the mixture of the soap and the washing liquid is cooled to said temperature, and thereafter separately removing the washed soap and the washing liquid from the tank.

4,248,770

PROCESS FOR PREPARING STABILIZED ROSIN ESTER, AND PRESSURE-SENSITIVE ADHESIVE COMPOSITION AND HOT-MELT COMPOSITION

Kohtaro Matsuo, Mino, and Seiichi Tsuchida, Sakai, both of Japan, assignors to Arakawa Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jun. 11, 1979, Ser. No. 47,125
Claims priority, application Japan, Jun. 23, 1978, 53-76725
Int. Cl.³ C09F *1/04*
U.S. Cl. 260—104 **11 Claims**

1. A process for preparing a stabilized rosin ester having a high softening point, which comprises:

(a) subjecting a rosin to disproportionation;

(b) purifying said disproportionated rosin in order to remove materials of high molecular weight and unsaponifiable materials to obtain a disproportionated rosin having an acid value of not less than 170; and

(c) esterifying the resulting disproportionated purified rosin with a polyhydric alcohol selected from the group consisting of tri- or multi-valent polyhydric alcohols in order to obtain a rosin ester having a softening point of 65° to 140° C.

4,248,771

METAL COMPLEX REACTIVE DYESTUFFS

Walter Scholl, Cologne, and Horst Nickel, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

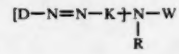
Filed Nov. 2, 1978, Ser. No. 957,074

Claims priority, application Fed. Rep. of Germany, Nov. 5, 1977, 2749597

Int. Cl.[3] C09B *45/00*

U.S. Cl. 260—146 T 12 Claims

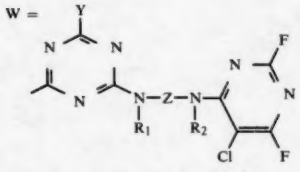
1. 1:1 and 1:2 metal complex reactive dyestuffs based on at least one metallisable dyestuff of the formula



wherein

D = the radical of a metallisable diazo component with an OH group or COOH group in the o-position relative to the azo bridge,

K = the radical of a coupling component which couples in the o-position relative to a phenolic or enolic OH group,



R, R_1 and R_2 = H or a substituent

Y = halogen and

Z = phenylene, naphthylene and C_1–C_3-alkylene which are unsubstituted or substituted by sulfo, C_1–C_4-alkyl, C_1–C_4-alkoxy or halogen,

and wherein

the group

is bonded, directly or via a bridge member, to an aromatic ring C atom of D or K.

4,248,772

POSITIVELY OR NEGATIVELY CHARGED AZO COMPOUNDS CONTAINING A BALLASTING GROUP

William E. Long, Brentwood, England, assignor to Ciba-Geigy AG, Basel, Switzerland

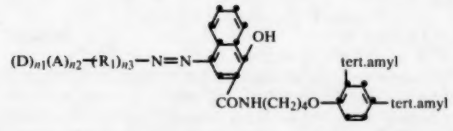
Filed Feb. 23, 1979, Ser. No. 14,777

Claims priority, application United Kingdom, Oct. 30, 1978, 42414/78

Int. Cl.[3] C09B *29/20, 45/04, 45/08, 45/18*

U.S. Cl. 260—146 R 15 Claims

1. An azo compound of the formula



wherein A is quaternary ammonium, phosphonium or arsonium or guanidinium or is $—SO_3^{\ominus}$, $HPO_4^{\ominus}$ or $—CH_2SO_4^{\ominus}$, D is a diffusible dye which carries a charge opposite in sign to the charge carried by A, said dye being phthalocyanines, anthraquinones, azines, acridines, indigo dyes, oxonols, pyrylium, azo or azoxy dyes, R_1 is phenyl or pyridinyl or these radicals substituted by alkyl or alkoxy each of 1 to 4 carbon atoms, halogen or hydroxyl, R_1 is present unless A is pyridinium, n_1 and n_2 each are 1 or 2 and n_3 is 0 or 1.

4,248,773

ACETOACETAMIDE DIAZO DYESTUFFS

Rudolf Hurter, Basel, and Alfred Fasciati, Bottmingen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

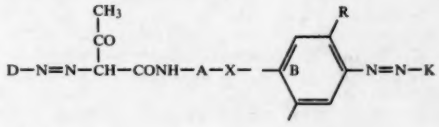
Filed Nov. 29, 1978, Ser. No. 964,548

Claims priority, application Luxembourg, Dec. 5, 1977, 78634

Int. Cl.[3] C09B *45/30*

U.S. Cl. 260—148 13 Claims

1. A compound of the formula



wherein

D is a residue of a diazo component,

K is a residue of a coupling component,

A is 1,3-phenylene, 1,4-phenylene, chloro-1,4-phenylene, or 1,4-naphthylene,

X is an oxygen atom or a sulfur atom,

R is an acidic water solubilizing group, provided that when A is 1,3-phenylene, X is para to the azo group of ring B.

4,248,774

P-SULPHOPHENOXY-PHENYLAZO INDOLES

Herbert Hugl, and Gerhard Wolfrum, both of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

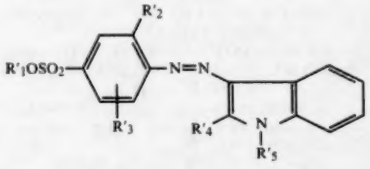
Filed Apr. 3, 1978, Ser. No. 892,912

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1977, 2715135

Int. Cl.[2] C09B *29/36;* D06P *1/18, 3/26, 3/54*

U.S. Cl. 260—165 3 Claims

1. A disperse dyestuff of the formula



wherein

R_1' is phenyl or phenyl monosubstituted to trisubstituted by C_1–C_4-alkyl, chlorine, nitro, cyclohexyl or phenyl,

R_2' is halogen, cyano, trifluoromethyl, nitro, C_1–C_4-alkyl or C_1–C_4-alkoxy,

R_3' is H, halogen, trifluoromethyl, C_1–C_4-alkyl or C_1–C_4-alkoxy,

R_4' is C_1–C_4-alkyl or phenyl, and

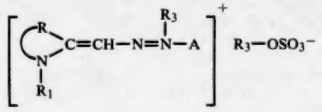
R_5' is C_1–C_4-alkyl, benzyl or phenethyl.

4,248,775
PREPARATION OF SOLUTIONS OF AZO METHINE BASIC DYESTUFFS

Roderich Raue, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 11, 1976, Ser. No. 657,031
Claims priority, application Fed. Rep. of Germany, Feb. 15, 1975, 2506444
Int. Cl.[3] C09B *43/00, 46/00;* D06P *3/76*
U.S. Cl. 260—154 1 Claim

1. Process for the preparation of a solution of the basic dyestuff of the formula



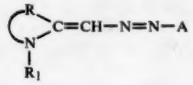
wherein

R is the remaining part of a 5-membered or 6-membered heterocyclic ring;

R_1 is alkyl, alkenyl, cycloalkyl, aralkyl, aryl, haloaryl, C_1-C_4-alkaryl, C_1-C_4-alkoxyaryl, or alkyl substituted by halogen, hydroxyl, cyano, C_1-C_4-alkoxy, phenoxy, or acetoxy;

R_3 is alkyl; and

A is phenyl, naphthyl, or either of phenyl or naphthyl substituted 1–3 times with alkyl, alkoxy, aralkyl, aralkoxy, halogen, carboxyl, carboxylic acid esters, carbonamide, amino, acylamino, aryl, acyl, acyloxy, aryloxy, or nitro; the process comprising reacting a dye base of the formula:



with a dialkyl sulphate of the formula

$(R_3\text{-}O\text{-})_2\text{-}SO_2$

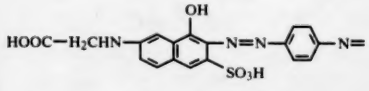
in glycerol triacetate, methylglycol acetate, ethylglycol acetate, ethylene glycol diacetate, β-methoxypropionitrile, β-hydroxypropionitrile, γ-butyrolactone, ethylene glycol carbonate, or propylene glycol carbonate.

4,248,776
SYMMETRICAL TRISAZO DYE OBTAINED BY COUPLING TETRAZOTIZED 4-4'-DIAMINOZOBENZENE WITH 2-CARBOXYMETHYLAMIN0-8-NAPHTHOL-6-SULPHONIC ACID

Sisto S. Papa, Milan, and Renzo Ferrario, Ceriano Laghetto, both of Italy, assignors to Aziende Colori Nazionali Affini Acna S.p.A., Milan, Italy

Filed Apr. 25, 1979, Ser. No. 33,225
Claims priority, application Italy, Apr. 28, 1978, 22790 A/78
Int. Cl.[3] C09B *35/36, 35/38;* D06P *3/24, 3/32*
U.S. Cl. 260—173 1 Claim

1. Trisazo dye having the following formula:



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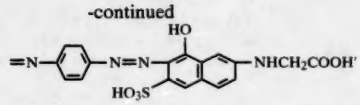
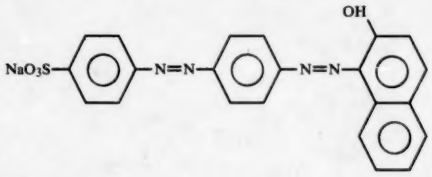


4,248,777
PROCESS FOR PREPARING ACID RED 151

Nancy E. Akers, Lock Haven, Pa., assignor to American Color & Chemical Corp., Charlotte, N.C.

Filed Jan. 18, 1979, Ser. No. 4,445
Int. Cl.[3] C09B *29/10;* D06P *1/06, 3/16, 3/24*
U.S. Cl. 260—191 2 Claims

1. In a process for preparing the dye:



wherein the sodium salt of aminoazobenzene monosulfonic acid is diazotized with sodium nitrite in an aqueous mineral acid and the resultant diazonium salt added to a cold aqueous alkaline solution of 2-naphthol to effect coupling, the improvement comprising: (1) employing (a) phosphoric acid as the mineral acid in the diazotization and sodium hydroxide as the aqueous alkali in the coupling or (b) hydrochloric acid as the mineral acid in the diazotization and sodium phosphate as the aqueous alkali in the coupling and (2) maintaining an ion balance in the reaction system such that disodium hydrogen phosphate salts are formed in situ and remain in solution in the final coupling mass.

4,248,778
ABS-POLYMERS OF HIGH NOTCHED IMPACT STRENGTH

Bernhard Arnold, Pulheim; Friedrich Kowitz, Dormagen; Dieter Kuhlmann, Pulheim; Karl-Heinz Ott, Leverkusen, and Leo Morbitzer, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 19, 1979, Ser. No. 50,071
Claims priority, application Fed. Rep. of Germany, Jun. 23, 1978, 2827594
Int. Cl.[3] C08J *3/18;* C08L *9/02*
U.S. Cl. 260—23.7 M 4 Claims

1. A composition of matter comprising 100 parts by weight of an acrylonitrile-butadiene-styrene polymer, 0.05 to 0.5 parts by weight of a liquid polymethyl phenyl siloxane or liquid polydimethyl siloxane having a viscosity from 20 to 100,000 cSt at 20° C. and 0.25 to 5 parts by weight of calcium stearate, pentaerythrol tetrastearate, the bis-stearylamide of ethylene diamine or a mixture thereof.

4,248,779

PROCESS FOR PRODUCING THIOLCARBAMATES

Zenichi Sato, Shimizu; Fumiya Tabuchi, Shizuoka; Keiichiro Takagi, Shizuoka, and Yoji Imamiya, Shizuoka, all of Japan, assignors to Ihara Chemical Industry Company, Limited, Tokyo, Japan

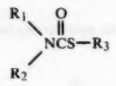
Filed Oct. 4, 1978, Ser. No. 948,346

Claims priority, application Japan, Nov. 16, 1977, 52/137424

Int. Cl.[3] C07C *155/03;* C07D *207/32, 295/10, 211/06*

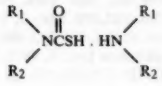
U.S. Cl. 260—239 BF 10 Claims

1. In a process for producing a thiolcarbamate having the formula:



wherein R_1 and R_2 are the same or different and each represents an alkyl, alkoxy, alkenyl, cycloalkyl, hydroxyalkyl, phenyl or benzyl group and R_1 and R_2 can form a pyrrolidinyl, piperidyl, morpholino or hexamethyleneimino ring and R_3 represents a lower alkyl or benzyl group or a substituted benzyl group having one or two halogen atom, alkyl, alkoxy, alkylthio, nitro or cyano group substituents by reacting carbonyl sulfide with a sec-amine having the formula:

wherein R_1 and R_2 are as defined above thereby forming an amine salt of a thiolcarbamic acid having the formula:



and then reacting said salt with a halogenated hydrocarbon having the formula:

$$X—R_3$$

wherein R_3 is as defined above and X represents a halogen atom, the improvement comprising: conducting said reaction between said sec-amine and said carbonyl sulfide in a solvent consisting of water thereby forming an aqueous solution of said salt having a salt concentration ranging from 40 to 80%; and thereafter reacting said salt with said halogenated hydrocarbon.

4,248,780

PROCESS FOR PREPARING AMPICILLIN

Kekhusroo R. Bharucha, Toronto; Heinrich M. Schrenk, Don Mills, and Clarke E. Slemon, Toronto, all of Canada, assignors to Canada Packers Limited, Canada

Filed Aug. 21, 1979, Ser. No. 68,385

Int. Cl.[3] C07D *499/12*

U.S. Cl. 260—239.1 19 Claims

1. A process for preparing ampicillin comprising, acylating silylated 6-aminopenicillanic acid with phenylglycyl halide in the presence of at least about 1.5 moles of urea per mole of 6-aminopenicillanic acid in an aprotic halogenated hydrocarbon solvent present in an amount of from about 1.5 to about 6 ml per 1 gram of 6-aminopenicillanic acid while maintaining the temperature of the reaction mass below about 20° C., cooling the reaction mixture to a teperature of between about −5° to 5° C., mixing the cooled reaction mixture with at least about five times the theoretical amount of water to cleave the silyl groups and adjusting the pH to approximately 1.5 to 2.0 during this stage, and after cleavage of the silyl groups raising the pH and precipitating ampicillin trihydrate.

4,248,781

PURIFICATION OF CRUDE CAPROLACTAM

Peter Horn, Hirschberg, and Hugo Fuchs, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 24, 1979, Ser. No. 78,028

Claims priority, application Fed. Rep. of Germany, Oct. 17, 1978, 2845075

Int. Cl.[3] C07D *201/16*

U.S. Cl. 260—239.3 A 5 Claims

1. A process for purifying crude caprolactam which has been obtained by rearrangement of cyclohexanone-oxime in the gas phase over a catalyst containing boron trioxide, wherein caprolactam is crystallized out, by cooling, from a melt which contains, per 100 parts by weight of crude caprolactam, from 5 to 30 parts by weight of primary alkanols or fatty acids, each of which have a carbon chain of 6 to 10 carbon atoms and are substituted by alkyl radicals of 1 to 5 carbon atoms, and from 0 to 5 parts by weight of water, and is separated from the mother liquor.

4,248,782

PREPARATION OF ε-CAPROLACTAM BY CATALYTIC REARRANGEMENT OF CYCLOHEXANONE-OXIME

Hugo Fuchs, Ludwigshafen; Uwe Brand, Rosengarten, and Peter Horn, Hirschberg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 24, 1979, Ser. No. 78,031

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1978, 2844880

Int. Cl.[3] C07D *201/04*

U.S. Cl. 260—239.3 A 7 Claims

1. In a process for the preparation of ε-caprolactam by catalytic rearrangement of cyclohexanone-oxime in the gas phase at from 230° to 450° C. over a supported catalyst, containing boron trioxide, in a fluidized bed, wherein the catalyst is removed from the fluidized bed at the rate at which it becomes spent and is treated, in a fluidized state, with gases containing molecular oxygen at from 600° to 900° C., after which boron trioxide or boric acid is added to the fluidized catalyst, at from 300° to 900° C., before the catalyst is returned to the fluidized bed, the improvement wherein particles consisting of boron trioxide or boric acid of particle size from 0.05 to 1.5 mm are fed to the fluidized catalyst at one or more points.

4,248,783

STEROIDS HAVING A 3-(4-HYDROXYPHENYL)PENTANEDIOIC ACID MONOHYDRAZIDE SUBSTITUENT

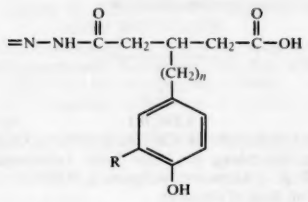
Ravi K. Varma, Belle Mead, N.J., and B. Richard Vogt, Yardley, Pa., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 38,593, May 14, 1979. This application Sep. 24, 1979, Ser. No. 78,369

Int. Cl.[3] C07J *71/00*

U.S. Cl. 260—239.55 D 6 Claims

1. A steroid having as a substituent a group having the formula



wherein R is hydrogen or alkyl and n is 0, 1, 2, 3 or 4.

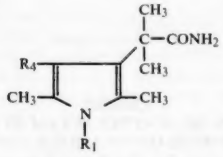
4,248,784

PYRROLE-3-ACETAMIDES

Malcolm R. Bell, and Rudolf Oesterlin, both of East Greenbush, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed Feb. 25, 1977, Ser. No. 772,004
Int. Cl.[3] C07D *207/337*
U.S. Cl. 260—326.2 **4 Claims**

1. A compound having the formula:



where R_1 is methyl or phenyl and R_4 is hydrogen or methyl.

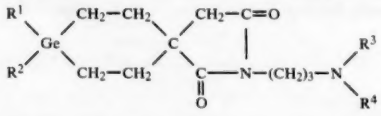
4,248,785

PREPARATION OF GERMAAZASPIRODIONES AND GERMAAZASPIRANES

Chester M. McCloskey, Altadena; James R. Fischer, Claremont, and Leonard F. Scott, Long Beach, all of Calif., assignors to The Norac Company, Inc., Azusa, Calif.

Filed Apr. 26, 1979, Ser. No. 33,429
Int. Cl.[3] C07D *207/40, 295/12*
U.S. Cl. 260—326.5 A **26 Claims**

1. A dialkylgermaazaspirodione compound in crystalline form and having the formula:



wherein R^1 and R^2 are the same or different alkyl groups of 1 to about 4 carbon atoms and R^3 and R^4 are the same or different alkyl groups of 1 to about 4 carbon atoms.

9. A process of purifying a dialkylgermaazaspirodione of the formula set forth in claim **1** which comprises crystallizing said dione in the presence or absence of a solvent and separating the resulting crystals from the mother liquor.

19. A process of preparing a dialkylgermaazaspirane which comprises purifying a dialkylgermaazaspirodione compound of the formula set forth in claim **1** by crystallization, and reducing said purified dione.

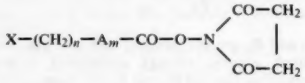
4,248,786

HYDROXY-SUCCINIMIDE ESTER COMPOUNDS

Hans-Georg Batz, Tutzing; Jurgen Horn, Tutzing-Garatshausen; Klaus Stellner, Bernried; Josef Maier, Weilheim; Michael Nelboeck-Hochstetter, and Gunter Weimann, both of Tutzing, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

Division of Ser. No. 815,338, Jul. 13, 1977, Pat. No. 4,155,914. This application Mar. 8, 1979, Ser. No. 19,017
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1976, 2631656
Int. Cl.[3] C07D *207/46;* **C07G** *7/00*
U.S. Cl. 260—326.26 **5 Claims**

1. Hydroxy-succinimide ester compound of the formula



wherein

X is a carboxy-succinimide ester group

A is —O—CH_2—CH_2 when n is 2 but otherwise is a single bond;

n is a whole number of from 2 to 7;

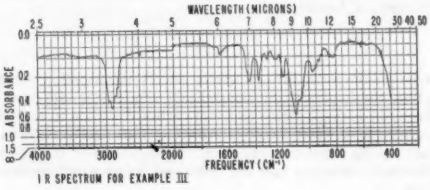
m is 1, 2, 3 or 4.

4,248,787

PROCESS FOR PREPARING SUBSTITUTED CYCLIC ACETALS OF OXYACETALDEHYDES AND SAID CYCLIC ACETALS

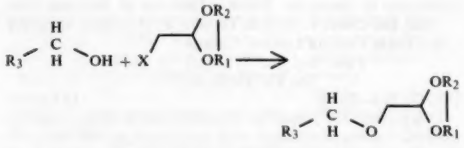
Mark A. Sprecker, Sea Bright; John J. Kryschuk, Howell, and John B. Hall, Rumson, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 902,390, May 3, 1978, which is a continuation-in-part of Ser. No. 811,480, Jun. 30, 1977, abandoned. This application Dec. 8, 1978, Ser. No. 968,009
Int. Cl.[2] C07D *317/10, 319/06, 321/06*
U.S. Cl. 260—338 **2 Claims**



I R SPECTRUM FOR EXAMPLE III

1. A process for preparing citronellyl oxyacetaldehyde alkylene acetal according to the reaction:

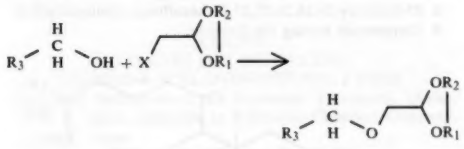


comprising the steps of (a) intimately admixing citronellol with chloroacetaldehyde alkylene acetal in the presence of a base which is sodium hydroxide and a phase transfer agent which is tricapryl methyl ammonium chloride; the reaction temperature being in the range of from 120° C. up to about 200° C.; the mole ratio of citronellol to chloroacetaldehyde alkylene acetal being from 0.5:1 up to 2:1, the mole ratio of citronellol to base being between 1:1 and 1:2; the concentration of tricapryl methyl

ammonium chloride phase transfer agent in the reaction mass based on amount of chloroacetaldehyde alkylene acetal being in the range of from 0.5 grams of tricapryl methyl ammonium chloride per mole of chloroacetaldehyde alkylene acetal up to 25 grams of tricapryl methyl ammonium chloride per mole of chloroacetaldehyde alkylene acetal; the reaction being carried out in the absence of solvent or in the presence of a solvent selected from the group consisting of xylene and decalin; and (b) fractionally distilling the resulting product hereby citronellyl oxyacetaldehyde alkylene acetal is recovered from the distillate; wherein

is the citronellyl moiety; wherein R_1 and R_2 taken together form an alkylene moiety having from 2 up to 4 carbon atoms and wherein X is chloro.

2. A process for preparing a mixture of geranyl oxyacetaldehyde and neryl oxyacetaldehyde according to the reaction sequence:



comprising the steps of (a) intimately admixing a mixture of geraniol and nerol with chloroacetaldehyde alkylene acetal in the presence of a base which is sodium hydroxide and a phase transfer agent which is tricapryl methyl ammonium chloride; the reaction temperature being in the range of from 120° C. up to about 200° C.; the mole ratio of mixture of geraniol and nerol to chloroacetaldehyde alkylene acetal being from 0.5:1 up to 2:1; the mole ratio of mixture of nerol and geraniol:base being from 1:1 up to 1:2; the concentration of tricapryl methyl ammonium chloride in the reaction mass based on amount of chloroacetaldehyde alkylene acetal being in the range of from 0.5 grams of tricapryl methyl ammonium chloride per mole of chloroacetaldehyde alkylene acetal up to 25 grams of tricapryl methyl ammonium chloride per mole of chloroacetaldehyde alkylene acetal; the reaction being carried out in the absence of solvent or in the presence of a solvent selected from the group consisting of xylene and decalin; (b) then fractionally distilling the resulting product whereby the mixture of geraniol oxyacetaldehyde alkylene acetal and nerol oxyacetaldehyde alkylene acetal is recovered from the distillate; wherein

represents the geranyl or neryl moiety; wherein R_1 and R_2 taken together represent alkylene of from 2 up to 4 carbon atoms; and wherein X is chloro.

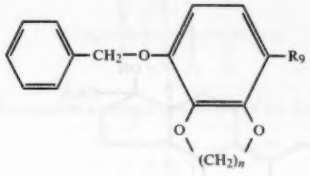
4,248,788

SUBSTITUTED BENZODIOXANE, BENZODIOXOLE AND BENZODIOXEPINE COMPOUNDS

Guy R. Bourgery, Colombes; Alain P. Lacour, La Varenne; Gerard H. Moinet, Orsay; Bernard M. Pourrias, La Foret, and Anne-Marie P. Ruch, Paris, all of France, assignors to Delalande S.A., Courbevoie, France

Continuation-in-part of Ser. No. 894,965, Apr. 10, 1978, Pat. No. 4,178,442. This application Apr. 13, 1979, Ser. No. 29,653
Claims priority, application France, Apr. 19, 1977, 77 11707
Int. Cl.³ C07D *319/18, 317/64*
U.S. Cl. 260—340.3 **8 Claims**

1. A compound having the formula



wherein n is 1, 2 or 3, and

(A) when n is 2, R_9 is selected from the group consisting of methoxy, acetyl, hydroxy, acetoxy, alkoxycarbonyl in which the alkyl has 2 to 5 carbon atoms, cyclohexyloxycarbonyl, carboxamido, N-methylcarboxamido, N-cyclohexylcarboxamido, N-phenylcarboxamido, alkanoylamino in which the alkyl has 2 to 5 carbon atoms, cyclohexylcarbonylamino, benzoylamino, N-alkylcarbamoylamino in which the alkyl has 1 to 5 carbon atoms, N-cyclohexylcarbamoylamino, N-phenylcarbamoylamino, N-paramethoxyphenylcarbamoylamino, ethoxycarbonylamino, N,N'-dimethylcarbamoylamino, methylamino, morpholinocarbonylamino, N,N-dimethylcarbamoylamino, carboxamidomethyl, N-methylcarboxamidomethyl, hydroxycarbonylmethyl, cyano, ethyl acetate, carboxy, amino, hydroxymethyl, cyanomethyl, chloromethyl and acetamido, and

(B) when n is 1 or 3, R_9 is selected from the group consisting of acetyl, amino, acetamido and acetyl oxime.

4,248,789

PROCESS FOR PRODUCING CATECHINS

Fumio Okada, Makurazaki, Japan, assignor to Director of National Research Institute of Tea, Shizuoka, Japan

Filed Dec. 13, 1979, Ser. No. 103,038
Claims priority, application Japan, Feb. 7, 1979, 54/12212
Int. Cl.³ C07D *311/62*
U.S. Cl. 260—345.2 **9 Claims**

1. A process for producing catechins comprising admixing an aqueous caffeine solution with an aqueous solution of tannic substance which has been extracted from tea leaves to form free catechin compounds selected from the group consisting of epicatechin and epigallocatechin and esters of catechin compounds selected from the group consisting of epicatechin gallate and epigallocatechin gallate.

4,248,790

GONA-4,9(10)-DIENES AND PROCESS OF PRODUCING THE SAME

Kurt Ponsold; Michael Hübner, and Michael Oettell, all of Jena, Fed. Rep. of Germany, assignors to Veb Jenapharm, Jena, Fed. Rep. of Germany

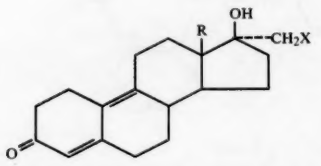
Continuation of Ser. No. 816,871, Jul. 18, 1978, abandoned, which is a continuation-in-part of Ser. No. 806,471, Jun. 14, 1977, abandoned. This application Feb. 13, 1979, Ser. No. 11,951

Claims priority, application Fed. Rep. of Germany, Jun. 14, 1976, 193348

Int. Cl.[3] **C07C** *117/00;* **C07J** *17/00*

U.S. Cl. 260—397.4 **17 Claims**

1. A compound of the formula

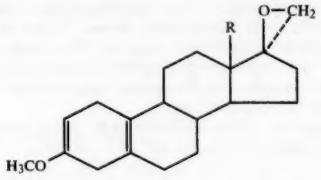


I

wherein R is methyl and X is Cl, or Br, or R is ethyl and X is Cl, Br, N_3 or CN.

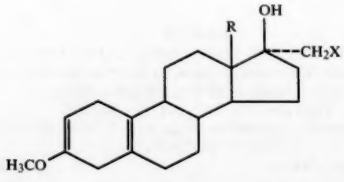
4. A process for producing gona-4,9(10)-dienes comprising

(a) opening up a 3-methoxy-13β-R-gona-2,5(10)-diene-17β-spiro-1′,2′-oxirane of the formula



II

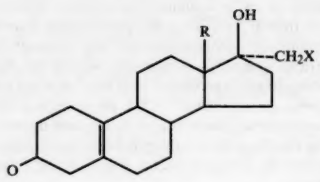
by reaction with a nucleophilic agent selected from the group consisting of hydrobromic acid, hydrochloric acid, sodium azide, alkali cyanides, ammonia and primary or secondary amines in an organic solvent so as to form the corresponding 3-methoxy-17α-CH_2X-13β-R-gona-2,5(10)-diene-17β-ol of the formula



III

then

(b) hydrolyzing the latter compound with a slightly acidic catalyst constituted by a weak organic carboxylic acid in dilute aqueous solution or by a dilute mineral acid whereby the 17β-hydroxy-17α-CH_2X-13β-R-gona-5(10)-ene-3-ol of the formula



IV

is formed, thereafter

(c) converting the latter compound by reaction with a halogenating agent into the 5,10-dihalogenated compound, and

(d) subjecting the dihalogenated compound to dehydrohalogenation, thereby forming a 17β-hydroxy-17α-CH_2X-13β-R-gona-4,9(10)-diene-3-one, wherein R is methyl or ethyl and X is Br, Cl, N_3 or CN.

4,248,791

23-HYDROXY-26,26,26,27,27,27-HEXAFLUORO-CHOLECALCIFEROL

Hector F. DeLuca; Yoko Tanaka, both of Madison, Wis.; Nobuo Ikekawa, Musashinoshi, and Yoshiro Kobayashi, Tokyo, both of Japan, assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

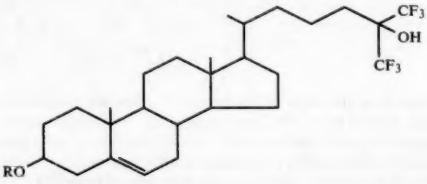
Filed Feb. 4, 1980, Ser. No. 118,149

Int. Cl.[3] **C07J** *9/00;* **A61K** *31/59*

U.S. Cl. 260—397.2 **8 Claims**

1. 25-hydroxy-26,26,26,27,27,27-hexafluoro cholecalciferol.

3. Compounds having the formula



where R is selcted from the group consisting of hydrogen, tetrahydropyranyl, an alkyl group having from 1 to about 4 carbon atoms, benzoyl or substituted benzoyl.

4,248,792

PROCESS FOR THE INTERCONVERSION OF CRYSTALLINE FORMS OF ETHYLENE BIS-STEARAMIDE

Marvin Rosen, Williamsport, and Lloyd C. Franklin, Montgomery, both of Pa., assignors to Glyco Chemicals, Inc., Greenwich, Conn.

Filed Jun. 22, 1979, Ser. No. 51,203

Int. Cl.[3] **C09F** *5/00;* **C11C** *3/00*

U.S. Cl. 260—404.5 **27 Claims**

1. A process for the preparation of alpha and beta forms of N,N′-ethylene bis-stearamide which comprises the steps of:

(a) heating N,N′-ethylene bis-stearamide to a temperature of at least 120° C. for a period of time sufficient to convert all the N,N′-ethylene bis-stearamide to the alpha form;

(b) cooling the product of step (a) to a temperature of about 40° C. or less, whereby at least 95% of the cooled product is in the alpha form; and

(c) heating the product obtained in step (b) to a temperature of from about 70° to 90° C. for a period of time whereby at least 95% of the product is converted to and recovered in the beta form.

4,248,793

PROCESS FOR THE PRODUCTION OF INTERNAL OLEFIN SULFONATE

Shizuo Sekiguchi, Funabashi; Katsumasa Nagano, Ichikawa; Yozo Miyawaki, Funabashi, and Kyozo Kitano, Chiba, all of Japan, assignors to The Lion Fat & Oil Co., Ltd., Tokyo, Japan

Filed Sep. 26, 1979, Ser. No. 79,139
Int. Cl.[3] C07C *143/16*
U.S. Cl. 260—513 T 4 Claims

1. A process for producing internal olefin sulfonates which comprises:

(a) sulfonating an internal olefin having from 10 to 22 carbon atoms with gaseous SO_3, at a molar ratio of less than 1 mole of SO_3 per 1 mole of said internal olefin, under conditions effective to produce a sulfonation reaction mixture which contains at least 20% by weight of unreacted internal olefin;

(b) neutralizing said sulfonation reaction mixture with caustic alkali at a temperature of 10° to 80° C.;

(c) commingling the neutralized sulfonation reaction mixture with an extracting reagent selected from halogenated hydrocarbons having a specific gravity of 1.2 or more, in a weight ratio of said neutralized mixture to the extracting reagent of from 0.1 to 5, to form a raffinate phase containing internal olefin sulfonates and sultones and an extract phase containing unreacted internal olefin dissolved therein; and

(d) hydrolyzing said raffinate phase in the presence of caustic alkali at a temperature of 110° to 180° C.

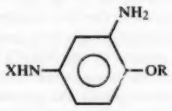
4,248,794

PROCESS FOR PRODUCING 2-AMINO-4-ACYLAMINOPHENYL ETHER

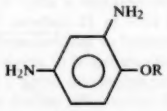
Yozo Fujii, Nishinomiya, and Hiromichi Yamaguchi, Osaka, both of Japan, assignors to Sumitomo Chemical Company, Limited, Japan

Filed Jul. 2, 1979, Ser. No. 55,196
Claims priority, application Japan, Jul. 10, 1978, 53/84162
Int. Cl.[3] C07C *102/00*
U.S. Cl. 564—133 9 Claims

1. A process for producing a 2-amino-4-acylaminophenyl ether of the formula,



wherein R is a C_1–C_9 alkyl group, a halogen-, C_1–C_3 alkoxy-, phenyl- or phenoxy-substituted C_1–C_4 alkyl group or a phenyl group unsubstituted or substituted with one or two substituents selected from halogen atoms, C_1–C_4 alkyl groups, C_1–C_4 alkoxy groups and acylamino groups, and X is an acyl group, which comprises contacting a 2,4-diaminophenyl ether of the formula,



wherein R is a defined above, with an acylating agent in the presence of a reaction solvent which is an N-substituted amide of a lower aliphatic acid or a mixture containing said N-substituted acid amide.

4,248,795

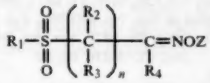
PREPARATION OF ORGANIC SULFONE COMPOUNDS

John K. Chan, Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

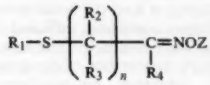
Filed Feb. 10, 1977, Ser. No. 767,488
Int. Cl.[3] C07C *131/00*
U.S. Cl. 564—255 33 Claims

1. In a process for preparing an organic sulfone by treating the corresponding sulfide compound with a peracid; the improvement which comprises conducting said process in the presence of from about 50 to about 95 weight percent water based on the total weight of water and peracid.

9. A process for preparing a compound of the formula:



which comprises treating a compound of the formula:



with an aqueous peracid solution, wherein:

n is 0 to 10;

R_1 is alkyl, phenyl, phenylalkyl, alkenyl, alkynyl, cycloalkyl or cycloalkenyl all of which may be substituted with one or more chloro, fluoro, bromo, cyano, nitro, alkyl, alkoxy, alkylsulfonyl or alkoxyalkyl groups;

R_2 and R_3 are individually hydrogen or either substituted or unsubstituted alkyl wherein the permissible substituents are one or more chloro, fluoro, bromo, cyano, nitro or alkoxy groups;

R_4 is hydrogen, chloro, fluoro, bromo, cyano, alkyl, alkylsulfonyl, alkoxy, carbalkoxyalkylsulfonyl, alkoxyalkyl or alkylsulfonylalkyl groups in which any alkyl moiety may be substituted with one or more chloro, bromo, fluoro, cyano, amido or nitro group;

Z is hydrogen or

wherein:

R_5 and R_6 are individually hydrogen or either substituted or unsubstituted alkyl, phenyl or phenylalkyl wherein the permissible substituents are one or more chloro, fluoro, bromo, nitro, cyano, alkyl or alkoxy groups.

4,248,796

QUATERNARY ALKYNOXYMETHYL AMINES

Patrick M. Quinlan, Webster Groves, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Continuation of Ser. No. 556,330, Mar. 7, 1975, abandoned. This application Nov. 24, 1978, Ser. No. 963,607
Int. Cl.[3] C07C *93/10, 93/12;* A01N *33/02*
U.S. Cl. 564—285 15 Claims

1. Quaternary alkynoxymethyl amine halides having one to two quaternary nitrogen atoms to each of which are attached up to two alkynoxymethyl moieties, the groups directly attached to the quaternary nitrogen atoms in the said quaternary amines being said alkynoxymethyl groups and being R and R' groups when there is but one quaternary nitrogen atom present per molecule and being said alkynoxymethyl groups and being R and Z groups when there are two quaternary nitrogen atoms present per molecule, the Z groups constituting bridging

groups linking the two quaternary nitrogen atoms, the R groups being monovalent hydrocarbon, hydroxy substituted alkyl, or furfuryl groups, the R′ groups being monovalent hydrocarbon, the Z groups being divalent alkylene, alkenylene, alkynylene, hydrocarbon alkaralkylene, or alkyleneether groups, and said alkynoxymethyl groups having the formula $HC{\equiv}CR''OCH_2$—, where R″ is alkylidene.

4,248,797

PREPARATION, POLYMERIZATION, AND USE OF NEW BIS-VINYLBENZYL NITROGENOUS MONOMERS

Frank J. Glavis, Rydal, and David H. Clemens, Willow Grove, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 779,426, Mar. 21, 1977, Pat. No. 4,137,264, which is a division of Ser. No. 593,906, Jul. 7, 1975. This application Sep. 18, 1978, Ser. No. 943,502

Int. Cl.[3] **C07C** *85/04*

U.S. Cl. 564—288 **3 Claims**

1. A process for the preparation of the crosslinking monomer, bis-(vinylbenzyl)monomethylamine, which comprises reacting vinylbenzyl chloride with monomethylamine with cooling to reduce the reaction temperature below about ambient temperature during at least the initial portion of the reaction time, in a solution containing sufficient alkali metal hydroxide to maintain the amine as the free base.

2. A process for the preparation of the crosslinking quaternary ammonium monomer, bis-(vinylbenzyl)dimethylammonium salt, which comprises reacting vinylbenzyl chloride with vinylbenzyldimethylamine in solution at a temperature not greater than about 40° C., and converting the resulting quaternary ammonium chloride product to the appropriate salt form by passage of the chloride form over the desired salt form of an anion exchange resin.

4,248,798

NEW METHOD FOR PREPARING PENTANITROANILINE AND TRIAMINOTRINITROBENZENES FROM TRINITROTOLUENE

Ronald L. Atkins, Ridgecrest; Arnold T. Nielsen, China Lake, and William P. Norris, Ridgecrest, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 28, 1980, Ser. No. 116,351

Int. Cl.[3] **C07C** *85/00, 85/02, 85/11, 85/26*

U.S. Cl. 564—441 **8 Claims**

5. A method for preparing triaminotrinitrobenzene comprising the steps of:

A. reacting trinitrotoluene with H_2S to produce a reaction product which contains 4-amino-2,6-dinitrotoluene and 2,6-dinitro-4-hydroxylaminotoluene;

B. reacting the reaction product with KI to convert the 2,6-dinitro-4-hydroxylaminotoluene to 4-amino-2,6-dinitrotoluene;

C. nitrating the 4-amino-2,6-dinitrotoluene with HNO_3 in H_2SO_4 to produce pentanitroaniline; and

D. reacting the pentanitroaniline with NH_3 to produce triaminotrinitrobenzene.

4,248,799

HYDROGENATION OF NITRILES IN AMMONIA AND WATER

Charles A. Drake, Nowata, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 27, 1978, Ser. No. 973,768

Int. Cl.[3] **C07C** *83/00, 87/02*

U.S. Cl. 564—491 **25 Claims**

1. A process for the catalytic hydrogenation of at least one aliphatic dinitrile to produce primary diamines, comprising:

contacting at least one said aliphatic dinitrile, in the substantial absence of unsubstituted alkanols containing from 1 to 12 carbon atoms per molecule, unsubstituted tertiary aliphatic alcohols having 4 to 12 carbon atoms per molecule, unsubstituted acyclic and unsubstituted cyclic ethers having 4 to 12 carbon atoms per molecule, saturated hydrocarbons having 4 to 12 carbon atoms per molecule, and mixtures thereof, with hydrogen, ammonia, water and a catalyst under suitable hydrogenation conditions, said catalyst being selected from the group consisting of Raney nickel, Raney cobalt, mixtures of Raney nickel and Raney cobalt, mixtures of Raney nickel with at least one component selected from the group consisting of elemental Group VIB metals and Group VIB metal compounds reducible by hydrogen to the corresponding Group VIB metal under said hydrogenation conditions, mixtures of Raney cobalt with at least one component selected from the group consisting of Group VIB metals and Group VIB metal compounds reducible by hydrogen to the corresponding Group VIB metals under said hydrogenation conditions, and mixtures of Raney nickel and Raney cobalt and at least one component selected from the group consisting of Group VIB metals and Group VIB metal compounds reducible by hydrogen to the corresponding Group VIB metals under said hydrogenation conditions, said water being present in a weight ratio of said water to said at least one aliphatic dinitrile in the range from about 1:100 to about 18:100, and said ammonia being present in an amount in the range from about 1 to about 100 weight percent based on the amount of said at least one aliphatic dinitrile.

4,248,800

MANUFACTURE OF ORGANIC HYDRAZINES

Uday D. Wagle, Morgan Hill, Calif., and Timothy J. Belford, Tonawanda, N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Mar. 22, 1979, Ser. No. 22,742

Int. Cl.[2] **C07C** *109/02, 109/04*

U.S. Cl. 564—464 **4 Claims**

1. A process for the manufacture of substituted hydrazines comprising:

(a) reacting in a first reaction zone, having a length to diameter ratio of 6 to 20 that is resident within a second reaction zone, gaseous chlorine admixed with nitrogen gas and gaseous NH_3 to produce gaseous chloramine and NH_4Cl in a temperature range of 25° to 350° C.;

(b) introducing water into the first reaction zone through an inlet after the chloramine has been produced to prevent plugging of the reactor by the NH_4Cl but preventing the chloramine from dissolving in the water;

(c) introducing the nitrogen carrier gas into the first reaction zone at a velocity sufficient to dilute the chloramine stream and reduce the driving force for transfer of chloramine from the gaseous phase into the water;

(d) reacting in a second reaction zone the gaseous chloramine produced in the first reaction zone directly with an aqueous alkali metal hydroxide and a substituted amine having the structure R_1R_2NH wherein:

R_1 is hydrogen or linear alkyl of 1 to 8 carbons; and

R_2 is selected from the group consisting of linear alkyl of 1 to 8 carbons, secondary alkyl of 3 to 10 carbons, tertiary alkyl of 4 to 12 carbons, aralkyl of 7 to 13 carbons, substituted or unsubstituted cycloalkyl of 3 to 12 carbons and substituted or unsubstituted aryl of 6 to 12 carbons, the substituent being a linear or branched alkyl of 1 to 8 carbons, the second reaction zone being vigorously agitated to insure a complete reaction and being maintained in a temperature range of −5° to 50° C.; and

(e) recovering the substituted hydrazine product in the aqueous phase from the second reaction zone.

4,248,801

PROCESS FOR THE PRODUCTION OF TERTIARY AMINE HAVING LONG CHAIN ALKYL GROUP

Susumu Tomidokoro, Funabashi; Michito Sato, Yokohama, and Daini Saika, Chiba, all of Japan, assignors to The Lion Fat & Oil Co., Ltd., Tokyo, Japan

Filed Jul. 3, 1979, Ser. No. 54,457
Claims priority, application Japan, Jul. 4, 1978, 53-81203
Int. Cl.[3] C07C *85/08, 85/20, 85/24*
U.S. Cl. 564—463 7 Claims

1. A process for preparing tertiary monomethylamines having long chain alkyl groups comprising the following sequence of (a) amination, (b) methylation and (c) reduction steps:

(a) reducing at least one unsaturated aliphatic nitrile having from 8 to 24 carbon atoms, or a mixture of nitriles containing at least one unsaturated aliphatic nitrile having from 8 to 24 carbon atoms with hydrogen, in the presence of a nickel hydrogenation catalyst, under the conditions of a reaction temperature of from 200° to 230° C. and a hydrogen pressure of from 0 to 10 kg/cm^{2}G, while the formed ammonia is removed in a manner such that at least 85% by weight of the ammonia, based on the theoretical amount, is removed from the reaction system in a reaction time of two hours or less, to thereby form a mixture of amines mainly containing secondary long chain aliphatic amines;

(b) reacting the resultant mixture of amines with a hydroxymethylation agent in the presence of a nickel hydrogenation catalyst at a reaction temperature of from 150° to 180° C., while hydrogen is passed through the reaction zone under a hydrogen pressure of from 0.5 to 5 kg/cm^2 G and water is continuously removed from the reaction zone, to thereby form a mixture of tertiary amines mainly containing tertiary long chain aliphatic monomethylamines; and

(c) reducing the resultant mixture of tertiary amines with hydrogen in the presence of a nickel hydrogenation catalyst, under the conditions of a reaction temperature of from 175° to 210° C. and a hydrogen pressure of from 5 to 10 kg/cm^{2}G, to thereby effect the hydrogenation of the unsaturated bonds of the tertiary amines.

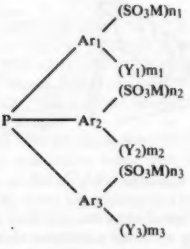
4,248,802

CATALYTIC HYDROFORMYLATION OF OLEFINS

Emile Kuntz, Lyons, France, assignor to Rhone-Poulenc Industries, Paris, France

Filed Jun. 17, 1976, Ser. No. 696,909
Claims priority, application France, Jun. 20, 1975, 75 19407; Apr. 29, 1976, 76 12672
Int. Cl.[3] C07C *45/50*
U.S. Cl. 260—604 HF 35 Claims

1. In a process for the hydroformylation of linear or branched chain ethylenically unsaturated aliphatic olefins having from 2 to 20 carbon atoms to their corresponding aldehydes, in liquid phase, comprising reacting an olefin with carbon monoxide and hydrogen, the improvement which comprises conducting the hydroformylation reaction in the presence of an aqueous solution of at least one water-soluble phosphine having the following structural formula:



(I)

in which:

Ar_1, Ar_2 and Ar_3, which may be identical or different, represent carbocyclic aryl groups having from 6 to 10 carbon atoms,

Y_1, Y_2 and Y_3, which may be identical or different, each represents a radical selected from the group consisting of linear or branched chain alkyl radicals having from 1 to 4 carbon atoms, alkoxy radicals having from 1 to 4 carbon atoms, halogen atoms, the —OH radical, the —C≡N radical, the —NO_2 radical, and the radical of the formula —NR_1R_2, in which R_1 and R_2, which may be identical or different, represent a linear or branched chain alkyl radical having from 1 to 4 carbon atoms,

M is an inorganic or organic cationic radical selected from the group consisting of the cations derived from the alkali metals, the alkaline earth metals, lead, zinc and copper, NH_4^+, and $N(R_3R_4R_5R_6)^+$ wherein R_3, R_4, R_5 and R_6, which may be identical or different, each represents a linear or branched chain alkyl radical having from 1 to 4 carbon atoms,

m_1, m_2 and m_3 are identical or different integers between 0 and 5 and

n_1, n_2 and n_3 are identical or different integers between 0 and 3, at least one of the numbers n_1, n_2 or n_3 being greater than or equal to 1,

said aqueous solution of the sulfonated aryl phosphate additionally comprising a member selected from the group consisting of metallic rhodium and a rhodium containing compound.

4,248,803

OLEFIN OXIDATION CATALYST

Thomas H. Vanderspurt, Homestead Park, N.J., assignor to Celanese Corporation, New York, N.Y.

Division of Ser. No. 960,202, Nov. 13, 1978. This application Sep. 19, 1979, Ser. No. 76,937
Int. Cl.[3] C07C *45/34*
U.S. Cl. 568—477 11 Claims

1. A process for the oxidation of olefinically unsaturated hydrocarbons to the corresponding olefinically unsaturated aldehydes which comprises reacting in the vapor phase an olefinically unsaturated hydrocarbon with molecular oxygen in the presence of an oxidation catalyst which corresponds to the formula:

$$Mo_{12}Ni_{5-7}Bi_{1-3}Co_{1-3}Fe_{1-3}Sb_{1-3}Zn_{0.3-0.8}M_{0.4-2}O_x$$

wherein Mo, Ni, Bi, Co, Fe, Sb, Zn and O are respectively the elements of molybdenum, nickel, bismuth, cobalt, iron, antimony, zinc and oxygen; M is at least one element selected from potassium and rubidium; and x represents the number of oxygen atoms between about 35 and 75 sufficient to satisfy the valence requirements of the other elements; wherein the said oxidation catalyst is prepared by a process which comprises the steps of (1) admixing and slurrying in an aqueous medium respectively compounds of Mo, Ni, Bi, Co, Fe, Sb, Zn and M which are at least partially water-soluble, (2) adjusting the final pH of the aqueous slurry admixture within the range between about 1–5, (3) concentrating the aqueous slurry admixture by water removal to yield a catalyst coprecipitate, (4) heating the catalyst coprecipitate at a temperature in the range between about 200°–250° C. in the presence of molecular oxygen, and (5) calcining the catalyst composition at a temperature between about 400°–600° C. in the presence of molecular oxygen.

4,248,804
PROCESS FOR THE PREPARATION OF 2,2'-BIS[4-(1,1,3,3-TETRAMETHYLBUTYL)PHENOL]SULFIDE

Akihiro Yamaguchi; Tadashi Kobayashi, both of Yokohama; Keisaburo Yamaguchi, Kawasaki, and Hisamichi Murakami, Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Aug. 29, 1979, Ser. No. 70,614

Claims priority, application Japan, Sep. 7, 1978, 53-109136; Sep. 18, 1978, 53-113651

Int. Cl.[3] **C07C** *149/36*

U.S. Cl. 568—47 **18 Claims**

1. In a process for the preparation of 2,2'-bis-[4-(1,1,3,3-tetramethylbutyl)phenol]sulfide by the reaction of 4-(1,1,3,3-tetramethylbutyl)phenol with a sulfidation agent selected from the group consisting of sulfur dichloride and sulfur monochloride, the improvement which comprises mixing the said 4-(1,1,3,3-tetramethylbutyl)phenol at a temperature of from −10° to 40° C. with an organic solvent selected from the group consisting of aliphatic hydrocarbons, alicyclic hydrocarbons and mixtures of aliphatic hydrocarbons with halogenated hydrocarbons or aromatic hydrocarbons, said solvent being in an amount insufficient for totally dissolving the 4-(1,1,3,3-tetramethylbutyl)phenol, thereby forming a suspension of the 4-(1,1,3,3-tetramethylbutyl)phenol in the organic solvent, and subjecting the resulting suspension to the reaction with the sulfidation agent at a temperature of from −10° to 40° C.

4,248,805
VULCANIZABLE RUBBER COMPOSITIONS CONTAINING N-(SULFENYL) PHTHALAMIDES AS SCORCH INHIBITORS

Alfred B. Sullivan, Wadsworth, and Raleigh W. Wise, Akron, both of Ohio, assignors to Monsanto Company, St. Louis, Mo.

Filed Apr. 26, 1979, Ser. No. 33,653

Int. Cl.[3] **C08F** *8/34;* **C08C** *19/00*

U.S. Cl. 260—780 **14 Claims**

1. A vulcanizable rubber composition comprising sulfur-vulcanizable diene rubber, sulfur-vulcanizing agent, organic vulcanization accelerating agent and, in an amount effective to inhibit premature vulcanization, a compound of the formula

$$X(-\overset{\overset{O}{\|}}{C}-NR'-SR)_2$$

in which X is phenylene and R and R' are the same or different carbyl radicals selected from the group consisting of alkyl of 1–20 carbon atoms, cycloalkyl of 5–12 carbon atoms, phenyl or mono- or di-substituted phenyl wherein the substituents are lower alkyl, lower alkoxy or halo, or R' is hydrogen, when X is 1,2-phenylene R' is carbyl radical and when X is 1,3 phenylene or 1,4 phenylene R' is carbyl radical or hydrogen.

4,248,806
APPARATUS FOR PRODUCING INERT COMBUSTION GASES

Johannes W. Graat, Overasselt, and Hans T. Remie, Nijmegen, both of Netherlands, assignors to Holec Gas Generators, Netherlands

Filed Feb. 27, 1979, Ser. No. 16,139

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1978, 2808435

Int. Cl.[3] **B01F** *3/04*

U.S. Cl. 261—118 **6 Claims**

1. Apparatus for producing an inert gas from the combustion of liquid or gaseous hydrocarbon fuel with air, comprising:

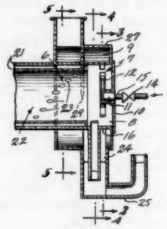
an elongated, substantially cylindrical first chamber including a combustion region at a first end of said first chamber and an adjoining cooling region at a second end of said first chamber, said first chamber having inner and outer walls defining a water jacket therebetween along the entire length and periphery of said first chamber;

means for introducing said fuel and air into said combustion region;

means for introducing water into said water jacket at said combustion region;

a plurality of spray nozzle means, disposed along the length of said inner wall in said cooling region and around the periphery thereof, for spraying water received from said water jacket into said cooling region;

a secondary cooler attached to said first chamber cooling region including a second chamber connected to said first



chamber cooling region and having a longitudinal axis, a third chamber annularly disposed about said second chamber and a wall separating said second chamber and said third chamber, said wall defining at least one gas outlet port for interconnecting said second chamber and said third chamber; and

at least one spray head means, disposed in said secondary cooler, for directing a stream of a fluid through said at least one gas outlet port, the average direction of said stream being substantially perpendicular to said axis, the relatively large contact area created between said stream and gases facilitating gas scrubbing and cooling.

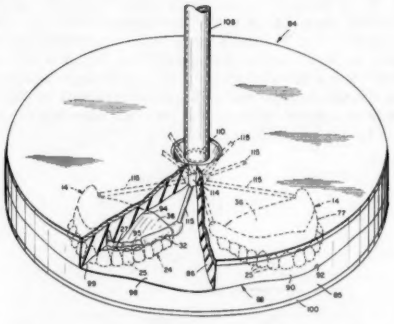
4,248,807
METHOD FOR MAKING A DENTURE

John Gigante, 600 Hilltop Ter., Cliffside Park, N.J. 07010

Continuation-in-part of Ser. No. 840,154, Oct. 7, 1977, Pat. No. 4,161,065. This application May 3, 1979, Ser. No. 35,650

Int. Cl.[3] **A61C** *13/04;* **B29C** *5/04*

U.S. Cl. 264—18 **25 Claims**



1. A method for manufacturing an article used in producing an artificial denture comprising the steps of:

A. positioning a set of teeth formed from individual teeth in a mold having a cavity associated therewith, said teeth each extending at one end thereof partially within said cavity,

B. rotating said mold;

C. adding to said rotating mold a moldable composition so as to fill said cavity and enclose said one end of each of said teeth, said composition comprising a polymerizable mixture of a polyvinyl acetate-based polymer and ethyl methacrylate homopolymer powder blend and a plasticized liquid acrylic monomer mixture comprising ethyl methacrylate and isobutyl methacrylate and a plasticizer, and

D. curing said composition in said cavity to integrally join said composition together with said set of teeth and to form said artificial denture, said composition being remoldable at elevated temperatures so as to selectively conform to desired portions of an oral cavity and said teeth being individually adjustable in said composition to desired positions.

4,248,808

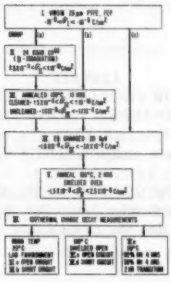
TECHNIQUE FOR REMOVING SURFACE AND VOLUME CHARGES FROM THIN HIGH POLYMER FILMS

James E. West, Readington, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 29, 1978, Ser. No. 974,334

Int. Cl.³ G11C *13/02*

U.S. Cl. 264—22 **10 Claims**



7. A method for making a thin film electret comprising the steps of injecting charge into a fluorinated polymer thin film having a thin layer of a metal deposited upon at least one surface thereof in order to produce a film having an intercepted charge density greater than 10^{-9} C/cm^2, and annealing the charged film, characterized by steps prior to said step of injecting charge comprising subjecting the film to penetrating radiation of a dosage ranging from 1 to 25 krad, in order to increase the conductivity of the film, and annealing the film at a temperature ranging from 80° to 150° C. in order to substantially restore the low conductivity of the film, thereby producing prior to said step of injecting charge a film having a residual surface charge density less than 10^{-9} C/cm^2.

4,248,809

METHOD AND APPARATUS FOR DETECTING DAMAGE OF BLAST FURNACE INSIDE WALL REPAIRING MATERIALS

Toshihiko Sakai; Sumio Kobayashi, and Takao Suzuki, all of Amagasaki, Japan, assignors to Sumitomo Metal Industries Limited, Osaka, Japan

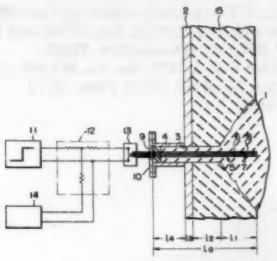
Filed Feb. 27, 1979, Ser. No. 15,744

Claims priority, application Japan, Feb. 28, 1978, 53-23149

Int. Cl.³ F27D *1/16*

U.S. Cl. 264—30 **4 Claims**

1. A method of detecting damage of inside wall blast furnace repairing materials, comprising the steps of: injecting a solidifying refractory material into the furnace wall from the exterior thereof, embedding electrically conductive lines insulated from each other into the partially solidified refractory material, impressing step pulses on said embedded lines, measuring the propagation time between the steps in the reflected waveform



of said step pulses; and determining the remaining thickness of said refractory material from the measured propagation times.

4,248,810

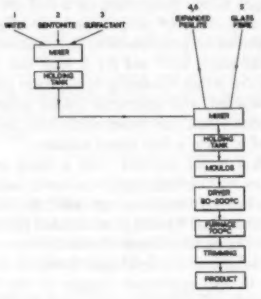
FOAMED INSULATING MATERIALS AND METHOD OF MANUFACTURE

Clive A. Erskine, Forestville, Australia, assignor to ACI Technical Centre Pty Ltd., Australia

Continuation of Ser. No. 778,666, Mar. 17, 1977, abandoned, which is a continuation-in-part of Ser. No. 657,954, Feb. 13, 1976, abandoned. This application Dec. 20, 1978, Ser. No. 971,320

Int. Cl.³ C04B *33/14*

U.S. Cl. 264—43 **13 Claims**



1. A method of producing a high temperature insulating foam comprising forming with sufficient water to produce a gellable foam, a mixture of components in the following proportions, expressed as percentages by weight of the components of the total composition, excluding water:

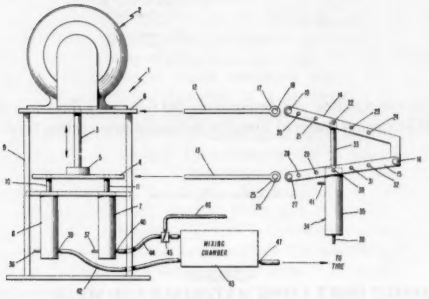
Glass fibre	0.5 to 20%
Expanded perlite	40% to 95%
Bentonite	5% to 40%

foaming the mixture, shaping the foamed mixture, drying the shaped foam and firing the dried foam at a temperature lower than 900° C. and in excess of the temperature at which the bentonite lattice hydroxyl water is lost, said temperature being below the temperature at which a ceramic product is formed.

4,248,811
SAFETY TIRES, METHODS AND EQUIPMENT THEREFOR

Earl N. Doyle, 1737 Campbell, Houston, Tex. 77055; Rene Trevino, Box 816, Friendswood, Tex. 77546, and Richard S. Hicks, 3737 Hillcroft, Houston, Tex. 77057

Filed Dec. 5, 1977, Ser. No. 857,697
Int. Cl.[3] B29D *27/04;* C08G *18/14*
U.S. Cl. 264—46.6 8 Claims



1. A method for completely filling a tire casing with a thermosetting, three component, closed-cell polyurethane foam comprising:

mixing a first component non-reactive liquid frothing agent with a second component comprising a liquid mixture of (1) a hydrogen donor comprising (a) a diol selected from the group consisting of polyoxypropylene glycol and hydroxyl terminated polybutadiene (b) optionally at least one glycerine based triol and (c) at least one polyol selected from the group consisting of aliphatic amine based polyols, castor oil, and piperazine based polyols; (2) an organo-silicone block copolymer surfactant; and (3) a tall oil fatty acid to form a first liquid mixture;

mixing said first liquid mixture with a third component comprising an NCO-terminated prepolymer, said prepolymer being selected from the group consisting of polyoxypropylene glycol and hydroxyl terminated polybutadiene to form a second liquid mixture wherein (1) the ratio of the equivalent weight of the hydrogen donor of the second component to the equivalent weight of the NCO-terminated prepolymer of the third component, is from about 1:1.04 to about 1:1.06; (2) the equivalent weight ratio of the diol, triol, and polyol which constitute the hydrogen donor is from about 1:1.2:3.3 to about 1:0:2.0 respectively; (3) the surfactant and tall oil fatty acid are present in an amount sufficient to impart a non-shrinking characteristic to said closed cell foam; and (4) the frothing agent is present in an amount sufficient to control the density of the foam to the extent necessary to impart the required load bearing characteristics to the tire casing;

reacting the second and third components of the second liquid mixture to form a polyurethane while maintaining the frothing agent liquid; and

introducing said second reacting liquid mixture into a tire casing under pressure conditions whereby said frothing agent vaporizes and foams the polyurethane within the tire casing to achieve a substantially uniform density throughout.

4,248,812
PROCESS FOR PRODUCING A RUSH-LIKE STRUCTURE

Toshiyuki Kobashi; Masahiko Ozaki, and Noboru Abe, all of Okayama, Japan, assignors to Japan Exlan Company Limited, Osaka, Japan

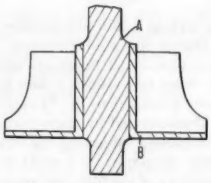
Filed Jun. 30, 1978, Ser. No. 921,169
Claims priority, application Japan, Jul. 18, 1977, 52-86264; Dec. 29, 1977, 52-160020
Int. Cl.[3] B29H *7/20*
U.S. Cl. 264—51 25 Claims

1. A process for producing a rush-like structure, characterized by preparing an acrylonitrile polymer composition in a substantially melted state by polymerizing acrylonitrile only or a monomer mixture composed of acrylonitrile and at least one ethylenically unsaturated compound, in a system in which water is present in an amount within the range of 3 to 50 weight % based on the total weight of the monomers present and water, under a pressure equal to or above the vapor pressure generated in the polymerization system, at a temperature above 120° C.; causing the thus-obtained melt to flow down towards a spinning orifice; adjusting the pressure of the system in which the melt just before the orifice is present, to 0.5 to 20 kg/cm^2; extruding the melt through the orifice to form a foamed product; and heat-treating the foamed product at a temperature above 90° C. to obtain a foamed structure having an average diameter of 0.2–6 mm and a bulk density of 0.1–0.5 g/cm^3.

4,248,813
PROCESS FOR PRODUCING HIGH DENSITY SINTERED PRODUCTS

Yoshinori Hattori; Mitsuyoshi Kawamura, and Yasushi Matsuo, all of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed Jul. 25, 1979, Ser. No. 60,696
Claims priority, application Japan, Jul. 28, 1978, 53-93032/78
Int. Cl.[3] C04B *33/34*
U.S. Cl. 264—62 7 Claims



1. In a process for producing a high density sintered product which comprises molding a composite of an inorganic powder and organic resin, burning off the organic resin and sintering, the improvement which comprises after burning off the organic resin, coating the surface of the molding with a rubber film, pressing said molding under two ton/cm^2 or more of isostatic pressure, and then carrying out said sintering step.

4,248,814
PROCESS FOR PRODUCING CERAMIC SINTERED BODIES

Seishi Yajima; Kiyohito Okamura, and Toetsu Shishido, all of Ohnuki, Japan, assignors to The Foundation: The Research Institute for Special Inorganic Materials, Asahi, Japan

Filed Jan. 23, 1979, Ser. No. 5,882
Claims priority, application Japan, Jan. 31, 1978, 53-8900
Int. Cl.[3] C04B *35/58*
U.S. Cl. 264—63 4 Claims

1. A process for producing a heat-resistant ceramic sintered body, which comprises preparing polycarbosilane partly con-

taining siloxane bonds by adding 0.01 to 15% by weight of polyborosiloxane containing phenyl groups in at least a part of the side chains of Si and having a skeletal structure composed of B, Si and O to a polysilane having the structure

wherein n is at least 3, and R_1 and R_2, independently from each other, represent methyl, ethyl, phenyl or hydrogen, and heating the polymer mixture in an atmosphere inert to the reaction thereby polymerizing it; mixing said polycarbosilane with a ceramic powder composed of at least one member selected from the group consisting of oxides, carbides, nitrides, borides and silicides; shaping the resulting mixture; and simultaneously with, or after, the shaping of the mixture, sintering the mixture at a temperature of from 800° C. to 2,000° C. in vacuum or in an atmosphere composed of at least one gas selected from the group consisting of inert gases, carbon monoxide gas, carbon dioxide gas, hydrogen gas, nitrogen gas and hydrocarbon gases.

4,248,815

PROCESS FOR THE MANUFACTURE OF GATE VALVES FOR CLOSURE DEVICES HAVING A POURING NOZZLE AND SIMILAR OBJECTS

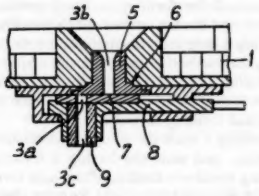
James B. Blackburn, Sete, and Jean L. Randon, Cournonterral, both of France, assignors to Kaiser Electro Refractaire France, Paris, France

Continuation-in-part of Ser. No. 942,707, Sep. 15, 1978, abandoned. This application Feb. 6, 1979, Ser. No. 9,807

Claims priority, application France, Mar. 13, 1978, 78 07190

Int. Cl.³ B28B *1/08, 3/08*

U.S. Cl. 264—71 **11 Claims**



1. Process for the manufacture of gate valve assemblies for closure devices having a pouring nozzle in which the gate valve assembly has a desired sliding surface which can be utilized without grinding, comprising the steps of placing a mold on a trued table having a flatness at least that of the desired sliding surface, mounting at least one tube in said mold, pouring a concrete of the refractory concrete type in the mold so that it spreads over the top of the trued table within the mold, causing the concrete to at least partially set, vibrating said table after pouring of said concrete and before setting thereof, and removing the part of the gate valve assembly formed from said trued table, whereby the side of the part of the gate valve assembly formed on said trued table constitutes the desired sliding surface of said gate valve assembly.

4,248,816

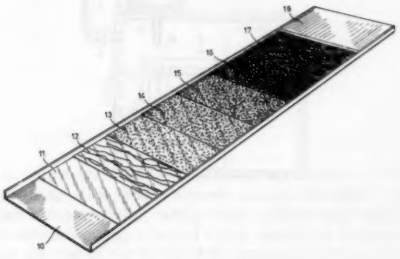
PROCESS FOR FORMING SIMULATED MARBLE AND RESULTING PRODUCT

James C. Sheridan, 967 Fishburn Dr., Brigham City, Utah 84302

Filed Jan. 4, 1979, Ser. No. 828

Int. Cl.³ B28B *1/32;* **B29C** *9/00*

U.S. Cl. 264—73 **8 Claims**



1. An improved process for forming simulated or cultured marble in a mold prepared with a mold-release coating, comprising forming a clear polyester gel coat film on said mold, then applying a colored polyester veining composition in a manner simulating the veining of natural marble; successively spattering in random fashion a plurality of layers of a polyester spatter composition over the previously applied veining composition in such manner that each layer of the spatter composition largely covers surface left uncovered by the previously applied layers and that there will be voids in the total spatter build-up; applying a catalyzed polyester matrix composition over the previously applied materials while said veining and said spatter compositions are in a wet state and prior to evaporation skinover of such veining and spatter compositions; curing the applied materials in the mold to provide a final simulated or cultured marble product; and removing said product from the mold.

4,248,817

METHOD FOR THE MANUFACTURE OF WORKPIECES IN PARTICULAR FAN BLADES, COMPLETE FAN ROTORS AND OTHER BODIES

Karl Frank, Goethestrasse 10, Dauchingen 7220, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 707,282, Jul. 21, 1976. This application Oct. 5, 1979, Ser. No. 82,081

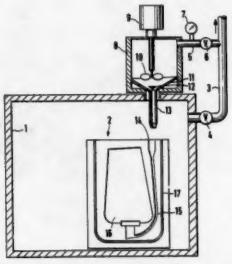
Claims priority, application Fed. Rep. of Germany, Mar. 4, 1976, 2609006

Int. Cl.³ B29C *1/08;* **B29D** *3/02;* **B29G** *3/00*

U.S. Cl. 264—102 **2 Claims**

1. In a method of manufacturing one-piece work-pieces, in particular, one-piece fan blades having a reinforced flow edge, the method comprising the steps of: first forming a solid core of a low melting point wax material, said core having a reduced leading edge, next placing a mat of fiberglas along the reduced leading edge of said core, then covering said core and said mat with fiberglas, next inserting the covered core into a hollow mold so that the fiberglas is in spaced relationship with the walls of the mold, then evacuating substantially all gas from a supply of heat-setting liquid synthetic resin mixture, the wax material of the core having a melting temperature which is higher than the setting temperature of said resin mixture but lower than the temperature at which the hardened resin mix-

ture will suffer damage, next introducing said resin mixture into said evacuated mold from above and between said fiberglas and the walls of said mold, said resin mixture substantially completely saturating said fiberglas and said mat, then heating



said mold to cause said resin mixture to at least partially set, next raising the temperature of said mold to cause the wax material of said core to melt and cause said resin mixture to harden, and finally removing said fan blade from said mold whereby there is provided the completed work-piece--.

4,248,818

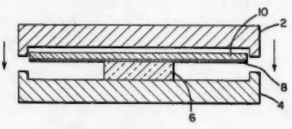
PROCESS FOR MAKING A RECORD

Kathleen Elizabeth, Rte. 1, Box 149, Billings, Mont. 59102

Filed Dec. 28, 1978, Ser. No. 973,872

Int. Cl.[2] B29C *9/00, 17/00;* **B29D** *17/00*

U.S. Cl. 264—107 **6 Claims**



1. A process for making a plastic record comprising the ordered steps of:

placing a cake of transparent moldable plastic in a press having grooves for impressing sound grooves into said plastic;

placing an opaque sheet of material having a picture printed on at least one side thereof onto the cake in the record press;

placing a transparent moldable plastic on top of the opaque sheet of material; and

pressing the combined cake, sheet and transparent plastic in said record press whereby a transparent record having a picture and sound grooves contained therein is formed.

4,248,819

PROCESS FOR IMPROVING THE PROCESSING PROPERTIES OF POWDERY POLYOLEFINS

Manfred Mayer, Niedernhausen; Gerhard Nöltner; Rudolf Nowack, both of Frankfurt am Main, and Wolfgang Strobel, Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 19, 1978, Ser. No. 952,662

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1977, 2747204

Int. Cl.[3] B29J *5/00*

U.S. Cl. 264—109 **13 Claims**

1. A process for improving the processing properties of a powdered polyolefin comprising the steps of:

heating the powdered polyolefin to a temperature between 40° C. and the melting point of the powdered polyolefin;

introducing the heated powdered polyolefin into a gap of two gap forming elements;

compressing the heated powdered polyolefin in the gap with a pressure of from 0.1 to 10 t/cm of gap length; and

comminuting the compressed powdered polyolefin to form a powder.

4,248,820

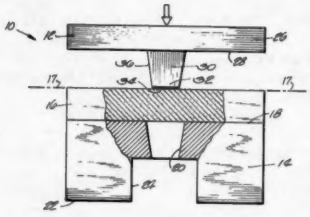
METHOD FOR MOLDING APERTURES IN MOLDED WOOD PRODUCTS

Bruce A. Haataja, Lake Linden, Mich., assignor to Board of Control of Michigan Technological University, Houghton, Mich.

Filed Dec. 21, 1978, Ser. No. 972,032

Int. Cl.[3] B29J *5/06*

U.S. Cl. 264—113 **1 Claim**



1. A method for forming a wood product comprised of wood flakes and binder intermixed therewith, the wood product including a hole therethrough, said hole having a densified periphery, the method comprising the steps of:

(a) providing a female die plate having a forming surface and a bore through said die plate, said bore converging away from said forming surface,

(b) providing a male die in opposed relation to said female die plate, said male die having a forming surface and a forming member extending from said forming surface and aligned with said bore, said forming member having one end adjacent said forming surface and a free end, and said forming member tapering toward said free end,

(c) admixing a resinous particle board binder with thin, elongated flake-like wood particles,

(d) depositing said wood particles to form a loosely felted layered mat including a major plane, substantially all of said wood particles of the mat lying in planes generally parallel to the major plane of the mat and said particles in each of said parallel planes being randomly oriented with respect to each other,

(e) placing said mat of wood flakes and intermixed binder between said male die and said female die, and

(f) forcing said female die plate and said male die plate together to compress said mat to form a rigid composite body and to form a hole in the rigid composite body, said

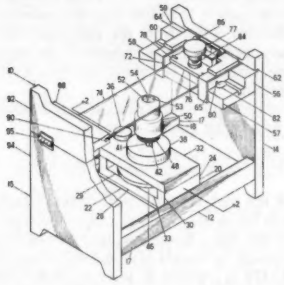
hole having a tapering configuration and a periphery comprised of material more dense than the remainder of the rigid composite body.

4,248,821

METHOD AND DEVICE FOR EMBEDDING A SPECIMEN FOR MICROSCOPIC EXAMINATION

Adrian F. Van Dellen, P.O. Box 12502, Department of Pathology Verterinary Research Institute, Onderstepoort, South Africa (0110)

Filed Jul. 25, 1979, Ser. No. 60,467
Int. Cl.³ A01N *1/00*
U.S. Cl. 264—135 **9 Claims**



1. A device for embedding in a plastic block a selected area of a biological specimen from a specimen slide, comprising:

(a) a frame, having a vertically disposed headboard and a vertically disposed footboard and a longitudinally disposed base member connected between said headboard and footboard;

(b) a mold jockey including a base, a mold pedestal mounted to said base for vertical movement with respect to said base, means for raising and lowering said mold pedestal with respect to said base, and mold clasp means mounted on said pedestal for clasping a plastic mold, said mold jockey base being adapted to slidably engage said frame base member for sliding movement therealong between said frame headboard and footboard; and

(c) a slide jockey mounted to said headboard for sliding movement transverse to the direction of movement of said mold jockey and including a slide clamp adapted to hold a specimen slide firmly in a horizontal position above said frame base member, whereby the top of a plastic mold held by said mold clasp means may be aligned with a selected location on a specimen slide by moving said mold jockey and said slide jockey until the plastic mold underlies the selected area of the slide, and whereby the plastic mold held by said mold clasp means may be moved up to make contact with the selected location on the slide by said means for raising and lowering said mold pedestal.

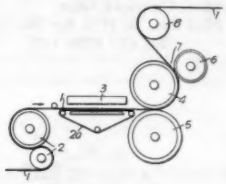
4,248,822

PROCESS AND APPARATUS FOR PRODUCING A MOISTURE-PERMEABLE FILM

Theo Schmidt, Forchheim, Fed. Rep. of Germany, assignor to Lever Brothers Company, New York, N.Y.

Filed Feb. 12, 1979, Ser. No. 11,473
Claims priority, application Fed. Rep. of Germany, Feb. 15, 1978, 2806402
Int. Cl.³ B29C *17/08*
U.S. Cl. 264—154 **7 Claims**

1. A process for manufacturing a moisture-permeable film from a thermoplastic material, comprising heating a moisture-impermeable film of a thermoplastic material to a deformation temperature near the lower limit of the thermoplastic temperature range at which deformation temperature orientation may be achieved while continuously advancing said film, embossing small protrusions in said heated film with such a shape that the end surfaces of the protrusions are flat surfaces which extend parallel to the base surface of said film and such that at least the end surfaces of the protrusions are oriented, cooling said embossed film while embossing said film and then further cooling said film, subsequently heating the end surfaces of the protrusions for a short time to at least the deformation temperature of the film material and thereby shrinking the end surfaces to form openings at the ends of the protrusions while supporting said embossed film on a cooled embossing cylinder.



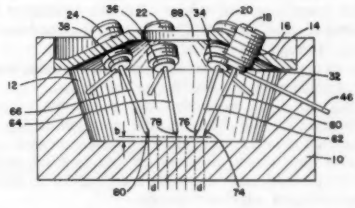
4. An apparatus comprising an embossing device, in which an embossing nip is formed between an engraved metal cylinder and a counter-roller, which metal cylinder and counter-roller are cooled, and a heated roller, which can be pressed against the tops of the bosses of the engraved metal cylinder, and means for guiding the heated starting film into the embossing nip and for taking off the embossed film provided with openings in the ends of the protrusions from the metal cylinder.

4,248,823

METHOD OF MAKING INK JET PRINT HEAD

Leonhard Bader, Stadtbergen; Frank Giessner, Augsburg; Ernst Pechinger, Meitingen-Herbertshofen; Friedrich B. Rombach, Augsburg; Wilhelm Ruprich, Augsburg; Helmut Weber, Augsburg, and Hermann Winter, Augsburg, all of Fed. Rep. of Germany, assignors to NCR Corporation, Dayton, Ohio

Filed Dec. 15, 1978, Ser. No. 969,769
Int. Cl.³ B29D *19/08;* B29C *6/04;* G01D *15/18*
U.S. Cl. 264—156 **13 Claims**



1. A method of making an ink jet print head comprising the steps of:

providing an open end mold having an inner shape corresponding to the print head to be cast,

covering the open end of said mold with a member having an inclined inner portion and a plurality of apertures spaced therearound,

inserting stud members having stem portions into said apertures to cause said stem portions to extend within said mold and terminate along a plane spaced from the bottom thereof, each of said stud members having a shape to form a cavity for receipt of an ink drive element,

inserting pin members at an angle into the side of said mold to reach the lower portion of said stud members,

filling the mold with hardenable casting material to form the print head,

forming a plurality of nozzles by boring holes in an alignment perpendicular to said mold bottom plane and to the

terminus of said stem portions for enabling ejection of droplets of ink from said print head, and

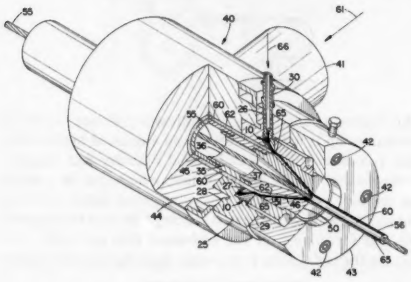
removing the stud members and the pin members to provide cavities for insertion of said ink drive elements and to provide passageways for flow of ink therethrough.

4,248,824

METHOD AND APPARATUS FOR STRIPING EXTRUDED POLYMER PRODUCTS

Peter H. Hattop, Williamsport, Pa., assignor to Alcan Aluminum Corporation, Cleveland, Ohio

Filed Jan. 24, 1979, Ser. No. 6,303
Int. Cl.³ B29F 3/12
U.S. Cl. 264—171 **13 Claims**



1. A method for extruding a polymer product with more than two longitudinal stripes incorporated on the surface of said product, said method comprising the steps of forcing a primary fluent polymer into a first confined passageway, forcing a secondary fluent polymer into a second confined passageway, dividing the flow of the secondary fluent polymer into more than two substantially equal streams, forcing at least two of said streams of secondary polymer through confined tapered passageways, combining the secondary fluent polymer with the primary fluent polymer by forcing the streams of the secondary polymer into a penetrating relationship with the stream of the primary polymer, said streams of secondary polymer contacting said stream of primary polymer from a projecting angle of about 45°, and passing the combined fluent polymers through a restricted opening.

6. In an apparatus for extruding polymer products such as insulated cable, pipe and the like including:

an extruder head assembly with a housing, a mandrel mounted in said housing, die and guider tip means mounted in said housing down stream from said mandrel, and a head cover monuted on said housing, said head cover partially enclosing said die and guider tip means, the improvement which comprises:

a dispensing ring mountable in said head assembly upstream from the converging sections of said die and guider tip means, said dispensing ring comprising a cylindrical shell with exterior and interior cylindrical surfaces and an end facing, an inlet bore in said exterior surface, more than two outlet bores in said interior surface, said outlet bores projecting downstream at an angle of about 45° with the center axis of said dispensing ring, and channel means in said end facing for dividing the flow of a fluent polymer from said inlet bore into more than two substantially equal streams and passing said fluent polymer to said outlet bores, said channel means including a tapered passageway for passing the flow of said fluent polymer to at least two of said outlet bores;

a mandrel spacing ring mountable in said head assembly on an end of said mandrel adjacent to said guider tip means; and

a head spacing ring mountable in said head assembly between said housing and said head cover, the end facings of said head spacing ring accommodating corresponding end facings of said housing and said head cover, said head spacing ring being mountable in contacting relation with said dispensing ring.

4,248,825

SULFUR PROCESSING RELEASE AGENTS

Delbert L. Coon, and Harry M. Schiefer, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jan. 24, 1979, Ser. No. 5,949
Int. Cl.³ B29D 7/02
U.S. Cl. 264—213 **22 Claims**

1. In a process for processing sulfur which process includes the steps of placing molten sulfur on a metal substrate, cooling the molten sulfur until it solidifies, and then subsequently releasing the solidified sulfur from the substrate, the improvement comprising, prior to the placement of the molten sulfur on the substrate, placing on the metal substrate a composition consisting essentially of

(1) 15 to 70 percent by weight of a carboxy functional siloxane fluid having the general formula

$$(CH_3)_3SiO\{(CH_3)_2SiO\}_x\{(CH_3)RSiO\}_ySi(CH_3)_3$$

wherein R is a carboxy functional radical attached to the silicon atom by an Si—C bond, x has an average value of from 25 to 400, and y has an average value of from 2 to 25,

(2) 0.1 to 5 percent by weight of a titanate having the general formula $Ti(OR')_4$ wherein R' is an aliphatic hydrocarbon or a hydroxylated aliphatic hydrocarbon radical containing from 1 to 2 carbon atoms, and

(3) 25 to 80 percent by weight of a solvent; and then drying said composition on the metal substrate whereby the release of the solidified sulfur from the substrate is enhanced.

4,248,826

INJECTION MOLDED BALATA SHELL

Fred H. Weber, Ashland, Ohio, assignor to Fred H. Weber Co., Inc., Ashland, Ohio

Filed Aug. 30, 1979, Ser. No. 71,127
Int. Cl.³ B29F 1/08
U.S. Cl. 264—328.14 **2 Claims**

1. In the process for the manufacture of the hemispherical shells for covering a golf ball core, each said shell being of a formulated compound having as the dominant constituent a trans 1,4-chain polymer of isoprene (balata, gutta-percha or synthetic transpolyisoprene), the improvement comprising the steps of: milling said formulated compound into a strip having the approximate dimensions of 4" to 30" wide and $\frac{1}{8}$" to $\frac{1}{4}$" thick; granulating said milled strip of compound into small cubes, with a minimum of impalpable powder of fines; and, injection molding said milled and granulated compound as a plasticized compound into a mold having one or more cool cavities in the form of said hemispherical shell, at a temperature which is maintained below 250° F.

4,248,827

METHOD FOR SANITIZING TOILETS

David J. Kitko, West Chester, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 12, 1978, Ser. No. 915,027
Int. Cl.³ E03D 9/02; A61L 2/16
U.S. Cl. 422—37 **13 Claims**

1. A method of sanitizing a toilet which comprises a flush tank and a bowl, with a hypochlorite sanitizing agent each time the toilet is flushed, and providing a transitory visual signal to indicate the activity of the sanitizing agent in the bowl, said method comprising the step of dispensing, from separate dispensing means, into the flush water,

(A) an aqueous solution of a compound which produces hypochlorite ion in aqueous solution, and

(B) a solution of a dye selected from the group consisting of those identified by Color Index numbers 24401 and 42040, and Color Index name Basic Blue 80;

the amount of (A) being sufficient to produce a concentration of from about 2 to about 30 ppm available chlorine in the bowl water at the end of the flush, the amount of (B) being sufficient to produce a dye concentration of from about 0.02 to about 2 ppm and an available chlorine:dye ratio of from about 2:1 to about 150:1, and the pH of the solution formed in the toilet bowl being from about 6 to about 9.

6. A method of sanitizing a toilet bowl which comprises a flush tank and a bowl, with a bromide-catalyzed hypochlorite sanitizing agent each time the toilet is flushed, and providing a transitory visual signal to indicate the activity of the sanitizing agent in the bowl, said method comprising the step of dispensing, from separate dispensing means, into the flush water,

(A) an aqueous solution of a compound which produces hypochlorite ion in aqueous solution, and

(B) a solution comprising a dye and a water-soluble bromide salt, the said bromide salt being present in sufficient quantity to catalyze the oxidizing action of the hypochlorite-producing compound of (A) in the bowl, the said dye being selected from the group of those identified by Color Index numbers 24401, 42040, 63010, 42085, 42675, and those having Color Index names Basic Blue 80, Reactive Blue 17 and Acid Blue 182;

the amount of (A) being sufficient to produce a concentration of from about 2 to about 30 ppm available chlorine in the bowl, the amount of (B) being sufficient to produce a dye concentration of from about 0.2 to about 2 ppm and an available chlorine:dye ratio of from about 2:1 to 150:1 in the bowl, and the pH of the solution formed in the bowl being from about 6 to about 9.

4,248,828

OXYGENATOR

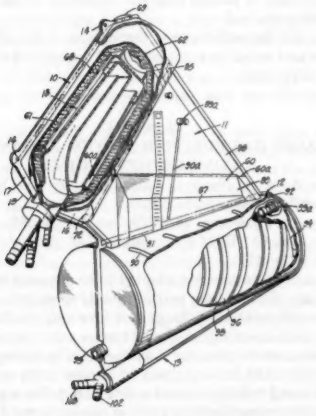
Donald J. Bentley, Newport Beach, and Donald A. Raible, Orange, both of Calif., assignors to Bentley Laboratories, Inc., Irvine, Calif.

Continuation of Ser. No. 565,043, Apr. 4, 1975, Pat. No. 4,058,369, which is a continuation-in-part of Ser. No. 436,913, Jan. 28, 1974, abandoned. This application Mar. 22, 1977, Ser. No. 780,077

The portion of the term of this patent subsequent to Nov. 15, 1994, has been disclaimed.

Int. Cl.³ A61M *1/03*

U.S. Cl. 422—47 **4 Claims**



2. A blood oxygenating device having a bubbler assembly with a passageway for forming films of blood in bubble form by directing oxygen into a stream of venous blood and causing the transfer of oxygen to the films of blood and the release of carbon dioxide from the films of blood, said passageway having a plurality of sinusoidally arranged segments serially disposed in end to end relationship, a first one of said segments being adjacent to the oxygen inlet end of said passageway and having a progressively reduced cross-sectional flow area extending along a substantial portion of its length, a second one of said segments in communication with said first segment which second segment has an initial portion of greater cross-sectional flow area than the downstream end of said first segment and a further portion having a cross-sectional flow area smaller than any portion of said first segment, said reduced cross-sectional flow area of said first segment and said further portion of said second segment being effective to accelerate the flow of bubbles therethrough and control the size of bubbles in said passageway.

4,248,829

INTEGRATED ANALYTICAL MATERIAL SUITABLE FOR SIMULTANEOUSLY PERFORMING A PLURALITY OF ANALYSES

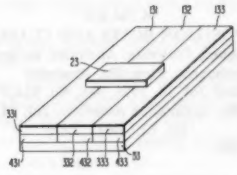
Masao Kitajima; Asaji Kondo, and Fuminori Arai, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Dec. 7, 1979, Ser. No. 101,385

Claims priority, application Japan, Dec. 11, 1978, 53/170658[U]

Int. Cl.³ G01N *33/52, 31/22*

U.S. Cl. 422—56 **1 Claim**



1. An integrated material for chemically analyzing a liquid sample comprising a supporting plate having provided thereon two or more different analytical units each comprising a reagent layer and a porous spreading layer or a portion of a common porous spreading layer, said units being disposed such that at least a portion of the reagent layers are in contact with or in close proximity to one another with said porous spreading layer(s) of said units being commonly covered with a liquid sample delivering patch.

4,248,830

DEVICE FOR MICROBIOLOGICAL TESTING

Karl-Heinz Kallies, and Manfred Winkler, both of Sebnitz, German Democratic Rep., assignors to Veb Arzneimittelwerk Dresden, Radebeul, German Democratic Rep.

Filed Jul. 23, 1979, Ser. No. 59,679

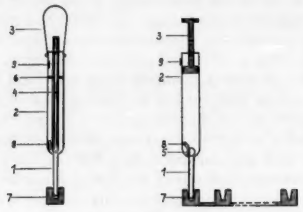
Claims priority, application German Democratic Rep., Jul. 25, 1978, 206901

Int. Cl.³ G01N *1/48;* **B01L** *3/00*

U.S. Cl. 422—59 **7 Claims**

1. A micro test tube adapted for use in microbiological determinations, comprising a capillary capable of forming a flow passage, the cross-sectional area of which at one end thereof increases to form a small generally cylindrical sample tube with a flow passage continuous with said capillary, first sealing means provided for sealing said capillary at its open end, second sealing means provided for sealing said sample tube at its open end, said second sealing means constituting aspiration means, said sample tube containing a movable needle

having a length greater than that of said sample tube for sealing off said passage between said sample tube and said capillary



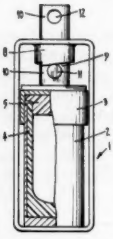
and a dyestuff which undergoes a detectable change corresponding to a microbiological reaction.

4,248,831

DECOMPOSITION BOMB AND CLAMP MEANS

Terence C. Hughes, Parkville, Australia, assignor to The University of Melbourne, Parkville, Australia

Filed Jul. 14, 1978, Ser. No. 924,670
Claims priority, application Australia, Jul. 14, 1977, PD0846
Int. Cl.[3] B01L *3/00*
U.S. Cl. 422—102 **7 Claims**



1. A clamp for a decomposition bomb comprising:

a body shaped to receive a decomposition bomb therein;

means associated with said body whereby when a decomposition bomb is located therein pressure can be applied to the cap of the decomposition bomb, said means to apply pressure to the decomposition bomb cap includes:

an apertured extension directed inwardly from said body and above the cap of said bomb, when located;

a ramp at the lower end of said extension;

a generally cylindrical locking member in said extension aperture; and,

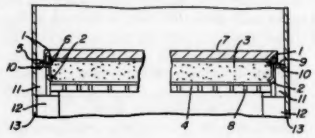
a pin adjacent the lower end of said locking member, the lower end of said locking member being closely adjacent the top of said bomb and said pin being contactable with said ramp whereby on rotation of said locking member it is moved downwardly to apply pressure to the top of said decomposition bomb.

4,248,832

WASTE GAS PURIFICATION REACTOR INCLUDING PACKING HOLDER AND CATALYST LEVELER SUPPORT

John E. Aiken, Monroeville Boro; William J. Didycz, Whitehall Boro, and Stanley J. Kerkentzes, Lower Burrell, all of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Jun. 11, 1979, Ser. No. 47,410
Int. Cl.[3] B01J *19/24, 23/64, 23/84*
U.S. Cl. 422—177 **11 Claims**



1. Apparatus for removing oxidizable pollutants from a waste gas stream which comprises:

(1) means for introducing said waste gas stream through an inlet into a chamber containing a substantially horizontal catalyst bed container means below said inlet which container means is for containing a granular catalyst bed for oxidizing said pollutants and which container means comprises:

(a) support means for said catalyst bed which support means is permeable to said waste gas stream and covers substantially the entire horizontal cross sectional area of said chamber below said catalyst bed and has an outer edge adjacent to the chamber wall,

(b) packing means to fit around the outer edge of said support means to prevent loss of catalyst between the edge of said support means and the wall of said chamber,

(c) ledge means which provides a substantially horizontal support around the inside periphery of said chamber wall for leveling said catalyst bed and which ledge means also exerts substantial downward and outward pressure on said packing means to thereby tightly press said packing means against said support means and the wall of said chamber;

(2) means for passing said waste gas stream through said catalyst bed while maintaining said catalyst bed at a temperature of between about 140° and about 540° C. and sufficient to sustain catalytic oxidation of said oxidizable pollutants; and

(3) means for withdrawing through an outlet of said chamber said waste gas stream which has passed through said catalyst bed.

4,248,833

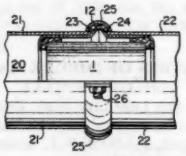
EXHAUST GAS PURIFIER SYSTEM FOR INTERNAL COMBUSTION ENGINE

Toshiho Aoyama, Nagoya, Japan, assignor to Chuo Hatsujo Kabushiki Kaisha, Aichi, Japan

Filed Aug. 28, 1979, Ser. No. 70,369
Int. Cl.[3] B01J *8/00;* **F01N** *3/28, 7/08, 7/18*
U.S. Cl. 422—179 **10 Claims**

1. A catalytic converter adapted to be disposed in an exhaust gas passage formed by a pair of tubular members each having an outwardly extending flange at its one end, the flanges cooperating with mounting means to connect the tubular members in tandem and in a concentric manner, and including a cylindrical metallic shell having a pair of flanges at its opposite ends which extend radially inward and which define a gas inlet and a gas outlet, respectively, a catalyst carrier formed by a monolithic, porous ceramic body having a catalyst coating, and elastic support means for supporting the catalyst carrier within the shell; characterized in that the shell is provided with an annular rib having a pair of side surfaces which project out-

wardly from the cylindrical surface thereof, the annular rib defining a pair of cylindrical portions of the shell which are contiguous with respective side surfaces, the catalytic converter being inserted into the pair of tubular members such that



the individual cylindrical portions of the shell are located within the associated tubular members, whereupon the respective side surfaces of the annular rib engage the associated flanges of the tubular members whereby the catalytic converter is supported within the gas passage.

4,248,834

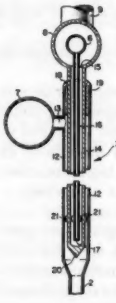
APPARATUS FOR QUENCHING PYROLYSIS GAS

Ichiro Tokumitsu, Tokyo, Japan, assignor to Idemitsu Petrochemical Co. Ltd., Tokyo, Japan

Filed May 7, 1979, Ser. No. 36,752

Int. Cl.³ F28D *7/10*

U.S. Cl. 422—200 **2 Claims**



1. In an apparatus that includes a hydrocarbon pyrolysis furnace containing a plurality of vertical elongated cracking tubes, each tube having a lower inlet and an upper outlet, the upper outlets of said cracking tubes being connected to a unit for quenching the hot pyrolysis gases, said quenching unit comprising:

(a) a plurality of vertical pipes, each of said pipes being vertically aligned above one of said cracking tubes and each of said pipes having a diameter larger than the diameter of the cracking tube that is below it, each of said vertical pipes having a lower inlet end that is connected to the upper outlet end of the cracking tube with which it is vertically aligned and an outlet end that is connected to a manifold for the passage of cooled pyrolysis gases, and

(b) cooling means inside each of said vertical pipes for the indirect cooling of the pyrolysis gases flowing through said vertical pipes, said cooling means comprising:

(1) a cooling pipe extending coaxially downwardly into the interior of each of said vertical pipes, each such cooling pipe having a closed lower end, there being sufficient clearance between the outer surface of each cooling pipe and the inner surface of each vertical pipe for the upward flow of pyrolysis gases therebetween,

(2) a water inlet pipe extending coaxially downwardly into the interior of each of said cooling pipes, each such water inlet pipe having an open lower end that is adjacent the lower end of said cooling pipe, there being sufficient clearance between the outer surface of each water inlet pipe and the inner surface of each cooling pipe for the upward flow of water or a mixture of water and steam, said water inlet pipe having an upper inlet for the introduction of water, and

(3) a receiving container for receiving the water or mixture of water and steam exiting from said cooling pipe.

4,248,835

APPARATUS FOR EXTRACTING WITH A LIQUID PRODUCTS WHICH ARE PART OF SOLIDS

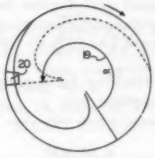
Guy V. Genie, 8 parvis Saint Roch, Chaumont-Gistoux, Belgium

Filed Jan. 19, 1979, Ser. No. 5,015

Claims priority, application Belgium, Jan. 23, 1978, 863184; Jul. 14, 1978, 189270

Int. Cl.³ B01D *11/02*

U.S. Cl. 422—272 **42 Claims**



1. An apparatus for the extraction of materials from solids by countercurrent contact of said solids with a liquid, said apparatus comprising:

a rotary drum having an axis which is horizontal or only slightly inclined;

an inner partition positioned within said drum, said partition being substantially in the shape of a spiral including plural spiral turns with spaces therebetween;

each said space having therein raising element means for lifting solids from a liquid;

each said space having therein barrier means over which said solids drop from a respective said raising element means and for stopping and forcing said liquid back into another said space during rotation of said drum; and

at least one of said raising element means having a curvature such that, during said rotation of said drum, said solids lifted from said liquid gradually drop in successive fractions over said barrier means without sliding on said raising element means.

4,248,836

RECOVERY OF NUCLEAR FUEL MATERIAL

William Batey; Alfred L. Mills, both of Thurso, Scotland, and John A. Williams, Warrington, England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed May 4, 1978, Ser. No. 902,719

Claims priority, application United Kingdom, May 11, 1977, 19861/77

Int. Cl.³ G21C *19/48*

U.S. Cl. 423—4 **3 Claims**

2. A process for the recovery of nuclear fuel material from irradiated nuclear fuel elements in which the nuclear fuel material is contained within a protective metal sheath, the metal of the sheath being selected from the group consisting of austenitic stainless steel and austenitic nickel alloy, said process comprising the steps of contacting the sheath with an embrittling agent which reacts with the metal of the sheath to effect its embrittlement and which is selected from the group consisting of tellurium, zinc, and a mixture of carbon dioxide and carbon monoxide; confining the sheath in contact with the embrittling agent and in an inert atmosphere at an elevated

temperature until embrittlement of the sheath metal occurs; and breaking up the embrittled sheath.

4,248,837

SOLVENT EXTRACTION OF COPPER, NICKEL WITH METHYL HEXYL DIOXIME

Ralph W. M. Lai, Lexington, and John K. Litchfield, Bedford, both of Mass., assignors to Kennecott Copper Corporation, New York, N.Y.

Filed Feb. 9, 1979, Ser. No. 11,034
Int. Cl.[3] C01G *3/00, 51/00, 53/00*
U.S. Cl. 423—24 **2 Claims**

1. A process for the recovery of an extractable metal value selected from the group consisting of copper, nickel and mixtures thereof from an aqueous solution comprising:

1. contacting said aqueous solution with a water-immiscible organic extractant solution containing methyl hexyl dioxime, wherein said aqueous solution is at a pH of at least 2.0 for extraction of copper and at a pH of at least 6.5 for the extraction of nickel, said dioxime being dissolved in an essentially water-immiscible organic solvent, said dioxime comprising between 1 to 15% by weight of the resulting solution; and,
2. separating the resulting metal-pregnant organic phase from the aqueous phase.

4,248,838

PREPARATION OF USEFUL $MGCL_2$. SOLUTION WITH SUBSEQUENT RECOVERY OF KCL FROM CARNALLITE

Ronald J. Allain, Richmond, Tex.; David G. Braithwaite, Gulf, Fla., and Joseph P. Maniscalco, Sugarland, Tex., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed Mar. 21, 1979, Ser. No. 22,396
Int. Cl.[3] C01F *5/34*
U.S. Cl. 423—162 **2 Claims**

1. A process to beneficiate carnallite mineral ores for the purpose of recovering anhydrous $MgCl_2$ and KCl said process comprising the following steps:

(a) Dissolving the carnallite mineral ores in the minimum amount of water required to obtain complete solubility, thereby obtaining a carnallite solution;

(b) Filtering from the carnallite solution of (a) any residual precipitates which are not soluble in said solution, thereby obtaining a filtered solution;

(c) Adding ethylene glycol to the filtered solution of (b) in sufficient quantity to solubilize all $MgCl_2$ present in said filtered solution, thereby obtaining an ethylene glycol-water-carnallite solution;

(d) Dehydrating the ethylene glycol-water-carnallite solution of step (c) by distilling water therefrom, thereby obtaining an anhydrous solution of $MgCl_2$ in ethylene glycol which may contain up to about 2.0% KCl by weight and a precipitate of anhydrous potassium chloride, said precipitate then being removed and recovered from said solution of $MgCl_2$ in ethylene glycol, thereby obtaining an anhydrous solution of $MgCl_2$ in ethylene glycol;

(e) Adding to the anhydrous solution of $MgCl_2$ in ethylene glycol anhydrous ammonia thereby forming a precipitate of $MgCl_2.6NH_3$, said precipitate being filtered from solution, washed with a low molecular weight solvent for ethylene glycol, said solvent having been saturated with anhydrous ammonia prior to washing said precipitate, and recovering said washed precipitate of anhydrous $MgCl_2.6NH_3$;

(f) Heating the $MgCl_2.6NH_3$ of (e) to temperatures sufficient to drive off all ammonia, thereby recovering anhydrous $MgCl_2$.

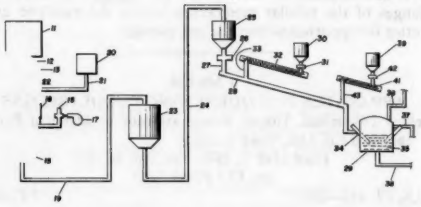
2. A method of removing trace quantities of potassium chloride from glycol wet filter cakes of $MgCl_2$-$6NH_3$ containing trace quantities of potassium chloride which comprises washing said cakes with methanol saturated with ammonia in a quantity sufficient to remove the potassium chloride and the glycol from said cake.

4,248,839

CHLORINATION OF IMPURE MAGNESIUM CHLORIDE MELT

Robert D. Toomey, Salt Lake City, Utah; Brian R. Davis, Brick, N.J.; Ramaswami Neelameggham, Salt Lake City, Utah, and R. Keith Darlington, Freehold, N.J., assignors to NL Industries, Inc., New York, N.Y.

Filed Jul. 30, 1979, Ser. No. 61,587
Int. Cl.[3] C01F *5/32*
U.S. Cl. 423—178 **14 Claims**



1. A process for purification of magnesium chloride, comprising:

a. adding ferrous chloride to an aqueous magnesium chloride solution;

b. drying said magnesium chloride solution to form substantially anhydrous magnesium chloride containing minor amounts of magnesium oxide and water;

c. adding to said dried magnesium chloride a first carbon source comprising a highly reactive carbon source and a second carbon source comprising a carbon source which is less reactive than said first carbon source, said first carbon source having a lower specific gravity than said second carbon source such that said first carbon source is disposed on top of and said second carbon source is dispersed throughout the magnesium chloride upon melting said magnesium chloride,

d. melting said dried magnesium chloride to form molten magnesium chloride, said magnesium chloride reacting with said water to form magnesium oxide and HCl; and

e. passing chlorine gas through said molten magnesium chloride to react with magnesium oxide to form magnesium chloride.

4,248,840

CIS-DIAMMINEPLATINUM(II) ORTHOPHOSPHATE COMPLEXES

James D. Hoeschele, Oak Ridge, Tenn., and Alan R. Amundsen, Somerville, N.J., assignors to Engelhard Minerals and Chemicals Corporation, Iselin, N.J.

Filed Mar. 7, 1979, Ser. No. 17,994
Int. Cl.[3] C01B *21/06, 25/00*
U.S. Cl. 423—302 **4 Claims**

1. A cis-diammineplatinum(II) orthophosphate complex comprising the cis-diammineplatinum moiety cis-$\{Pt(NH_3)_2\}$ and an orthophosphate moiety of the formula $(H_{2-n}PO_4)^{-(1+n)}$, wherein the atomic ratio of phosphorous to platinum is about 0.5 to 1 or about 1 to 1.

4,248,841

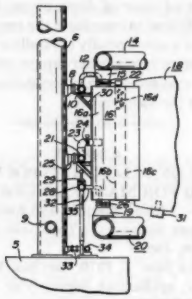
ANTI-LEAK VALVE FLUSHING SYSTEM FOR THERMAL REGENERATION APPARATUS

Edward H. Benedick, Morristown, N.J., assignor to Regenerative Environmental Equipment Co., Inc., Morris Plains, N.J.

Filed Jul. 25, 1979, Ser. No. 60,668

Int. Cl.³ F01N *3/10, 3/26;* **F23C** *6/04;* **F23G** *7/06*

U.S. Cl. 423—210 **12 Claims**



9. A method of preventing leaks across nominally closed inlet and outlet valves in incineration apparatus for purifying gaseous effluents which normally are conveyed through said valves, a heat-exchange zone and a high temperature combustion zone to exhaust means, comprising the steps of:

(a) obtaining a predetermined portion of said gaseous effluents which have been purified in said combustion zone, and

(b) feeding said portion of purified effluents so as to blanket the upstream side of said valve means when they are nominally closed at the same time.

4,248,842

REMOVAL OF CONTAMINANTS AND RECOVERY OF BY-PRODUCTS FROM HOT WASTE GAS STREAM

Kurt F. Kaupisch, Burlington, Ky.; Douglas W. Bennett, and Raphael Katzen, both of Cincinnati, Ohio, assignors to International Telephone & Telegraph Corporation, New York, N.Y.

Filed Mar. 5, 1979, Ser. No. 17,388

Int. Cl.³ C01B *17/00*

U.S. Cl. 423—242 **9 Claims**

1. A process for the removal of sulfur dioxide and other contaminants and the recovery of ammonium sulfate as a by-product from a hot waste gas stream comprising

cooling said waste gas stream to a temperature below about 120° F.,

passing said waste gas stream in sequence through at least two separate absorption zones utilizing as an absorbent a recirculated aqueous salt solution of ammonium sulfite-bisulfite, the absorbent in the first absorption zone having an initial pH of from 7 to 9.0 and a salt concentration of 30 to 50%, the absorbent in the second absorption zone having an initial pH of from 5.2 to 7.0 and a salt concentration of 0.1 to 5%,

withdrawing a portion of said aqueous ammonium sulfite-bisulfite salt solution from said first absorption zone,

oxidizing said withdrawn ammonium sulfite-bisulfite salt solution in the presence of air at a temperature below about 200° F. and a pressure between about 50 and 200 psig for a time sufficient to substantially convert said salts to sulfate salts and

recycling the remaining ammonia and sulfur dioxide vapors to the first absorption zone.

4,248,843

TREATMENT OF PHOSPHORIC ACID

Charles S. Williams, and Jacobus J. Gerber, both of Potchefstroom, South Africa, assignors to Triomf Fertilizer (Proprietary) Ltd., Johannesburg, South Africa

Filed Sep. 27, 1978, Ser. No. 946,237

Claims priority, application South Africa, Sep. 29, 1977, 77/5583

Int. Cl.³ C01B *25/16, 15/16, 25/26*

U.S. Cl. 423—321 R **11 Claims**

1. A method for treatment of phosphoric acid having a concentration of from about 50 to about 72% P_2O_5, and containing magnesium ions in solution as an impurity comprising heating the acid at a pressure between about 100 and about 500 p.s.i. to a temperature of from about 100° C. to about 180° C. and maintaining the acid at this temperature and pressure to cause more than 60% (mass/mass) of the magnesium to precipitate as the acid pyrophosphate.

4,248,844

PRODUCTION OF SIC FROM RICE HULLS AND SILICA

David E. Ramsey, Jr., Johnson City, and Lloyd I. Grindstaff, Elizabethton, both of Tenn., assignors to Great Lakes Carbon Corporation, New York, N.Y.

Filed Jan. 28, 1980, Ser. No. 115,690

Int. Cl.³ C01B *31/36*

U.S. Cl. 423—345 **11 Claims**

1. A process for the manufacture of SiC whiskers comprising the steps of:

1—Carbonizing rice hulls in a non-oxidizing atmosphere at a temperature between about 450° to 700° C.;

2—Comminuting the carbonized rice hulls to a fine powder;

3—Ashing a second portion of rice hulls in air at a temperature between about 450° to 700° C.;

4—Mixing the C and SiO_2 products thus obtained; and

5—Heating the mixture thus obtained in an inert atmosphere at a carbide-forming temperature between 1400° to 1600° C. for a time sufficient to form SiC whiskers.

8. A process for the manufacture of SiC whiskers comprising the steps of:

(1) Oxidizing a first portion of rice hulls in air at a temperature from about 450° to 700° C. to form an ash;

(2) Mixing said ash with a particulate source of carbon selected from the group consisting of graphite flour, activated carbon powder, and calcined petroleum coke, at a ratio of about 55 parts by wt. of said ash with 45 parts by wt. of said particulate carbon source;

(3) Placing the mixture thus formed in a chamber with an atmosphere of argon flowing continuously through said chamber in sufficient volume to displace essentially all the air in said chamber;

(4) Raising the temperature of said mixture from ambient to a preselected temperature within the range of 1400° to 1600° C. at an incremental rate of at least 100° C. per minute; and

(5) Maintaining said mixture at the said preselected temperature in said argon atmosphere for about one hour.

4,248,845

PROCESS FOR PREPARING CRYSTALLINE PHOSPHONITRILIC CHLORIDE OLIGOMERS

Tsukuru Kinoshita; Yuzuru Ogata, and Masayoshi Suzue, all of Tokushima, Japan, assignors to Otsuka Chemical Co., Ltd., Osaka, Japan

Filed Nov. 29, 1978, Ser. No. 964,462

Claims priority, application Japan, May 9, 1978, 53-55237

Int. Cl.³ C01B *25/10*

U.S. Cl. 423—300 **7 Claims**

1. In a process for preparing crystalline phosphonitrilic chloride oligomers by reacting phosphorus pentachloride with ammonium chloride in an organic solvent inert to chlorine, the improvement which comprises carrying out the reaction in the

presence of 0.01% to 10% by weight, based on the weight of phosphorus pentachloride, of at least one catalyst selected from the group consisting of metal oxides of Groups II-A, II-B, III-A, IV-A, IV-B and VIII of the Periodic Table; sulfides of metals of Groups II-A and II-B of the Periodic Table, fatty acid salts of metals of Groups II-A and II-B of the Periodic Table, acetylacetonatomagnesium, acetylacetonatozinc, organometallic compounds of metals of Groups II-A and II-B of the Periodic Table and peroxides of metals of Groups II-A and II-B of the Periodic Table; metal hydroxides of Groups III-A and VIII of the Periodic Table; and magnesium hydroxide.

4,248,846

PRODUCTION OF STABILIZED WET PROCESS PHOSPHORIC ACID

Richard N. Hill, Lakeland, Fla., assignor to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 883,381, Mar. 6, 1978, Pat. No. 4,164,550, and Ser. No. 951,804, Oct. 16, 1978, abandoned, which is a continuation of Ser. No. 767,175, Feb. 9, 1977, abandoned, which is a division of Ser. No. 683,756, May 6, 1976, abandoned, said Ser. No. 951,804, is a continuation-in-part of Ser. No. 812,319, Jul. 1, 1977, Pat. No. 4,110,422, which is a continuation-in-part of Ser. No. 683,756, May 6, 1976, abandoned, said Ser. No. 883,381, is a continuation-in-part of Ser. No. 812,319, Jul. 1, 1977, Pat. No. 4,110,422. This application Jul. 3, 1979, Ser. No. 54,446

The portion of the term of this patent subsequent to Aug. 29, 1995, has been disclaimed.

Int. Cl.[3] C01B *25/16*

U.S. Cl. 423—317 **21 Claims**

1. In the process of preparing wet process phosphoric acid with low post-precipitation characteristics in an acid train, comprising preparing dilute phosphoric acid by reaction of sulfuric acid and phosphate rock in a reaction zone to form a reaction slurry, filtering the reaction slurry in a filtration zone to provide a filtered acid, clarifying the filtered acid in a clarification zone, adding aluminum silicate to the clarified acid, concentrating the acid to about 45–52% P_2O_5, and passing the concentrated acid to a crystallizing zone to provide a product stream and a stream containing most of the crystals produced in the crystallizing zone, said crystals analyzing 10–45% P_2O_5 and being mostly phosphates; the improvement comprising returning the said crystals-containing stream to the acid train.

4,248,847

PROCESS FOR PREPARING A SUBSTANTIALLY CRYSTALLINE SODIUM ALUMINOSILICATE

Helmut Derleth, Nienburg; Ludwig Walter, Hanover; Karl-Heinrich Bretz, and Artur Kurs, both of Nienburg, all of Fed. Rep. of Germany, assignors to Kali-Chemie AG, Hanover, Fed. Rep. of Germany

Filed Feb. 8, 1978, Ser. No. 876,050

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1977, 2705088

Int. Cl.[3] C01B *33/28*

U.S. Cl. 423—329 **10 Claims**

1. A process for preparing a synthetic substantially crystalline sodium aluminosilicate of the molar composition $xNa_2O.Al_2O_3.ySiO_2.zH_2O$, wherein x is a value of from about 0.8 to about 1.2, y is a value from about 1.7 to about 2.2, and z is a value from about 3.0 to about 10.0 which comprises the steps of:

(a) thoroughly and rapidly mixing an aqueous sodium silicate solution and an aqueous sodium aluminate solution in such amounts that the content of the mixtue is equivalent to a molar ratio of $x'Na_2O:1Al_2O_3:ySiO_2:z'H_2O$ wherein x' is a value of from about 6.5 to about 9.0, y is a value of from about 1.7 to about 2.2, and z' is a value of from about 180 to about 250 within the minimum period of time which is sufficient to obtain a uniform mixture by simultaneously introducing said sodium silicate solution and said sodium aluminate solution at a constant ratio into a reaction zone under sufficiently intensive agitation to maintain a constant molar ratio of $Na_2O/AL_2O_3/SiO_2/H_2O$ throughout the reaction mixture whereby a reacton mixture containing an intermediate amorphous sodium aluminosilicate is formed;

(b) maintaining the reaction mixture at a temperature of from about 70° to about 100° C. under sufficient agitation in order to continuously ensure the constant molar ratio $Na_2O/Al_2O_3/SiO_2/H_2O$ throughout the reaction mixture for a period of time of from about 1 to about 3 hours which is sufficient to transform the reaction mixture into a suspension of a substantially crystalline sodium aluminosilicate precipitate in a mother liquor; and

(c) separating said substantially crystalline sodium aluminosilicate from the suspension.

4,248,848

DIHYDRATE OF CALCIUM HYPOCHLORITE AND METHOD FOR MANUFACTURE THEREOF

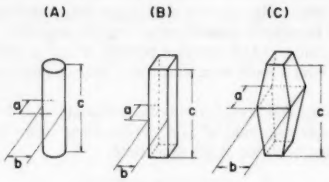
Tsugio Murakami; Mitsuo Kikuchi, and Kazushige Igawa, all of Shinnanyo, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shinnanyo, Japan

Filed Mar. 2, 1979, Ser. No. 16,981

Claims priority, application Japan, Mar. 6, 1978, 53-24576; Mar. 29, 1978, 53-35357

Int. Cl.[3] C01B *11/04;* C01F *11/44*

U.S. Cl. 423—474 **13 Claims**



1. A dihydrate of calcium hypochlorite having a prismatic crystal shape wherein the lengths of axes a, b and c thereof are in the ratios of

$$0.5 \leqq b/a \leqq 2.0$$

$$c/a \geqq 1.5$$

with the axis c thereof measuring at least 5 microns in length.

2. A method for manufacturing a prismatic dihydrate of calcium hypochlorite wherein, in crystallizing a dihydrate of calcium hypochlorite, dihydrate of calcium hypochlorite having a prismatic crystal shape with the lengths of the axes a, b and c thereof in the ratios of

$$0.5 \leqq b/a \leqq 2.0$$

$$ca \geqq 1.5$$

with the axis c thereof measuring at least 5 microns in length is allowed to crystallize in the presence of at least one kind of a crystallization medium selected out of a group consisting of carboxylic acid, an alkali metal salt of carboxylic acid and a carbohydrate.

11. A method for manufacturing a coarse dihydrate of calcium hypochlorite wherein a calcium hypochlorite dihydrate crystallizing process is carried out with addition of a prismatic dihydrate of calcium hypochlorite which is employed as seed crystal, said prismatic dihydrate being of a crystal shape having the lengths of the axes a, b and c thereof in the ratios of

$$0.5 \leqq b/a \leqq 2.0$$

$c/a \geqq 1.5$

with the axis c thereof measuring at least 5 microns in length.

4,248,849

PROCESS FOR THE CONTINUOUS DEHYDRATION AND CALCINATION OF HYDRATED ALUMINUM FLUORIDE FOR THE MANUFACTURE OF HIGH PURITY ALUMINUM FLUORIDE

Arankathu Skaria, Stäfa, and Reiner Stark, Fällanden, both of Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Oct. 3, 1979, Ser. No. 81,342

Claims priority, application Switzerland, Oct. 9, 1978, 10457/78

Int. Cl.³ C01F *7/50*

U.S. Cl. 423—489 **3 Claims**

1. A process for complete dehydration and subsequent calcination of aluminum fluoride hydrates comprising the steps of:

A. dehydrating the aluminum fluoride hydrate to produce aluminum semi-hydrate $AlF_3.0.5H_2O$;

B. indirectly slowly heating the aluminum semi-hydrate in a horizontal rotary kiln to a temperature of between 500°–600° C. over a period of about 5 to 15 minutes to remove the remaining water of crystallization; and

C. calcining the aluminum semi-hydrate at said temperature.

4,248,850

PREPARATION OF METAL BROMIDES

Kestutis A. Keblys, Southfield, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed Feb. 26, 1979, Ser. No. 15,067

Int. Cl.³ C01F *11/34*; C01G *9/04*

U.S. Cl. 423—491 **12 Claims**

1. A process for preparing basic metal bromides which comprises contacting in an aqueous medium a basic metal compound and bromine in the presence of added formaldehyde as a reducing agent.

4,248,851

PROMOTED OXIDATION OF AQUEOUS FERROUS CHLORIDE SOLUTION

Geza L. Kovacs, c/o Pori, Inc., Eastpoint Office Park, Suite 310, 1105 N. Point Blvd., Baltimore, Md. 21224

Division of Ser. No. 557,952, Mar. 13, 1975, abandoned, which is a continuation-in-part of Ser. No. 251,047, May 8, 1972, abandoned, which is a division of Ser. No. 56,639, Jul. 20, 1970, Pat. No. 3,682,592, which is a continuation-in-part of Ser. No. 791,191, Jan. 14, 1969, abandoned. This application Dec. 11, 1978, Ser. No. 968,613

Int. Cl.³ C01G *49/10*

U.S. Cl. 423—493 **10 Claims**

1. A process for producing a liquid aqueous solution of ferric chloride from waste HCl pickle liquor, which process comprises:

(1) reacting the HCl content of said liquor by treatment with an amount of finely divided iron oxide particles sufficient to convert the HCl content to iron chloride and to afford a minor amount of finely divided iron oxide particles dispersed in said treated liquor;

(2) evaporating water from said treated liquor to obtain a concentrated liquor at a temperature of about 220° F.;

(3) intimately intermingling air with said hot concentrated liquor, said hot concentrated liquor containing about 3 parts by weight of dissolved ammonium chloride per 100 parts by weight of hot concentrated liquor, at a pressure of about 100 psig while withdrawing a water vapor stream at a rate such that the temperature of the oxidation reaction zone is maintained at about 300° F., and

(4) continuing said oxidation reaction until a major proportion of the ferrous chloride content of said concentrated liquor has been converted to ferric chloride, present as liquid aqueous ferric chloride solution.

5. A process for the production of ferric chloride from ferrous chloride, which process comprises:

intimately intermingling free oxygen and liquid aqueous solution of ferrous chloride containing an oxidational-promotional amount of dissolved cations selected from the class consisting of a mixture of ammonium and chromium, copper, or nickel, said metal ions being present in a copromotional amount, and not more than a small amount of free HCl, at a temperature between about 175° and about 400° F., for a time sufficient to obtain a liquid aqueous solution containing dissolved ferric chloride and dissolved promoter ions.

4,248,852

PROCESS FOR THE PRODUCTION OF ALUMINA SUITABLE FOR USE AS A CATALYST CARRIER

Motoyoshi Wakabayashi, Omi; Takeo Ono, Kawasaki; Osamu Togari, Sagamihara, and Munekazu Nakamura, Kamakura, all of Japan, assignors to Chiyoda Chemical Engineering & Construction Co., Ltd., Tokyo, Japan

Filed Aug. 15, 1979, Ser. No. 66,869

Claims priority, application Japan, Aug. 15, 1978, 53-98725

Int. Cl.³ C01F *7/02, 7/34*

U.S. Cl. 423—626 **15 Claims**

1. A process for the production of an alumina suitable for use as a catalyst carrier comprising

establishing a seed aluminum hydroxide hydrogel having a pH of between about 6 and 10 at a temperature of at least about 50° C.,

sequentially adding

(a) an aluminum compound of said hydrogel to adjust the pH of said hydrogel to a value of less than 5 or more than 11 whereby fine crystallites of the aluminum hydroxide are dissolved, and

(b) then adding a neutralizing agent to said hydrogel to return the pH of the range of from about 6 to 10 to cause hydrated aluminum oxide crystallites to grow,

then repeating at least two additional times said sequential addition of said aluminum compound and of said neutralizing agent to continue the growth of said hydrated aluminum oxide crystallites, and

drying and calcining said hydrated aluminum oxide crystallites to form crystalline alumina having a predetermined pore volume ranging from 0.5 to 2 cubic centimeters per gram.

4,248,853

ASSAY METHOD AND KIT

Solomon H. Snyder, 2300 W. Rogers Ave., Baltimore, Md. 21209, assignor to Solomon Halbert Snyder, Baltimore, Md.

Filed Sep. 8, 1978, Ser. No. 940,712

Int. Cl.³ G01N *33/48*; A61K *43/00*; G01T *1/00*

U.S. Cl. 424—1 **24 Claims**

1. The method of determining the concentration of β-adrenergic blocking drug and any active metabolites thereof in a body fluid containing same comprising (a) mixing together β-adrenergic receptor material, radioactive β-adrenergic receptor binder and

body fluid, and measuring the amount of the radioactive β-adrenergic receptor binder on the β-adrenergic receptor material and (b) mixing together a concentration of a standard amount of non-radioactive β-adrenergic receptor binder, β-adrenergic receptor material and radioactive β-adrenergic receptor binder and measuring the amount of radioactive β-adrenergic receptor binder on the β-adrenergic receptor material.

4,248,854

PRODUCTION OF ANTIBODY TOWARD ASBESTOS AND IMMUNOASSAY THEREWITH

Herbert R. Lukens, Jr., La Jolla, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 27, 1979, Ser. No. 70,073
Int. Cl.[3] G01N *33/54, 33/58, 33/84*
U.S. Cl. 424—8 20 Claims

1. A method for the production of antibodies to asbestos comprising the steps of (a) reacting asbestos with an antigenic serum protein (b) recovering the antigenic reaction product (c) immunizing an animal with said antigenic reaction product (d) allowing a sufficient period of time for the production in the animal of an antibody to asbestos and (e) recovering said antibody from the animal.

4,248,855

PHARMACEUTICAL BASE SALTS

Izhak Blank, and Joseph Fertig, both of Haifa, Israel, assignors to Hydrophilics International, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 614,951, Sep. 19, 1975, abandoned. This application Aug. 27, 1976, Ser. No. 718,126
Int. Cl.[3] A61K *31/78*
U.S. Cl. 424—19 16 Claims

1. A method of preparing a stable fluid composition for sustained release of a phramaceutical compound comprising the steps of:

dissolving a pharmaceutically pure, acid group containing, water-insoluble, synthetic polymer and a salt-forming basic nitrogen containing pharmaceutically effective compound in organic solvent to form a salt of the polymer and the pharmaceutical compound in organic solution,

slowly adding water to said salt solution without coagulating the polymer salt, and

removing the organic solvent under vacuum to form a stable emulsion consisting of said salt in water;

said polymer comprising from 10 to 75% by weight of at least one hydrophilic monomer and from 25 to 90% by weight of at least one hydrophobic monomer; at least 50% of the acid groups of said polymer being neutralized.

4,248,856

SUSTAINED RELEASE PHARMACEUTICAL COMPOSITIONS

Paul C. Guley, Plattsburgh; Richard J. DeNeale, Morrisonville, and George Milosovich, Rouses Point, all of N.Y., assignors to American Home Products Corporation, New York, N.Y.

Filed Jul. 10, 1979, Ser. No. 56,156
Int. Cl.[3] A61K *9/22, 9/32, 9/36*
U.S. Cl. 424—21 19 Claims

1. A sustained release pharmaceutical composition comprising a compressed core containing a drug, a seal coating surrounding the core and a sugar coating surrounding the seal coated core wherein,

(a) the core comprises a therapeutically effective amount of at least one drug in an amount of about 29% to about 64% by weight of the core, and the cellulose polymers hydroxypropyl methylcellulose and ethylcellulose in an amount of 30% to about 45% by weight of the core; and

(b) the seal coating comprises an enteric coating material;

(c) the sugar coating comprises sugar and a loading dose of at least one drug contained in the core in which the ratio of said one drug in the sugar coating to said one drug in the core is from about 1:15 to about 1:4.3;

and wherein propranolol or a pharmaceutically acceptable salt thereof comprises at least one drug in both the core and the sugar coating.

4,248,857

SUSTAINED RELEASE PHARMACEUTICAL COMPOSITIONS

Richard J. DeNeale, Morrisonville; Paul C. Guley, Plattsburgh, and George Milosovich, Rouses Point, all of N.Y., assignors to American Home Products Corporation, New York, N.Y.

Filed Aug. 9, 1979, Ser. No. 65,315
Int. Cl.[3] A61K *9/22, 9/32, 9/36*
U.S. Cl. 424—21 17 Claims

1. A sustained release pharmaceutical composition comprising a compressed core, a seal coating surrounding the core and a sugar coating surrounding the seal coated core wherein,

(a) the core comprises by weight of the core about 31% to about 53% propranolol or a pharmaceutically acceptable salt thereof, about 7% to about 14.5% carboxypolymethylene, about 0% to about 3% zinc oxide, about 4.5% to about 10% stearic acid and about 3% to about 30% mannitol;

(b) the seal coating comprises an enteric coating material; and

(c) the sugar coating comprises sugar and a loading dose of said propranolol.

4,248,858

SUSTAINED RELEASE PHARMACEUTICAL COMPOSITIONS

Paul C. Guley, Plattsburgh; Richard J. DeNeale, Morrisonville, and George Milosovich, Rouses Point, all of N.Y., assignors to American Home Products Corporation, New York, N.Y.

Filed Aug. 9, 1979, Ser. No. 65,317
Int. Cl.[3] A61K *9/22, 9/32, 9/36*
U.S. Cl. 424—21 14 Claims

1. A sustained release pharmaceutical composition comprising a compressed core, a seal coating surrounding the core and a sugar coating surrounding the seal coated core wherein,

(a) the core comprises propranolol or a pharmaceutically acceptable acid addition salt thereof in an amount of about 20% to about 70% by weight of the core, at least one pharmaceutically acceptable water soluble polymer selected from the group consisting of hydroxypropyl methyl cellulose, hydroxypropyl cellulose, xanthan gum and karaya gum, and at least one pharmaceutically acceptable water insoluble polymer mixture selected from the group consisting of ethylcellulose and ethyl cellulose and at least one of carboxypolymethylene, hydroxypropyl methylcellulose phthalate and hydroxypropylcellulose, said polymers in an amount of about 30% to about 72% by weight of the core;

(b) the seal coating comprises an enteric coating material;

(c) and the sugar coating comprises sugar and a loading dose of said propranolol;

and with the proviso that when the water soluble polymer is only hydroxypropyl methylcellulose then the water insoluble polymer is not only ethylcellulose, and that when the water insoluble polymer is only ethylcellulose then the water soluble polymer is not only hydroxypropyl methylcellulose.

4,248,859

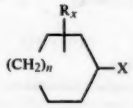
ALICYCLIC AMIDES HAVING A PHYSIOLOGICAL COOLING EFFECT

David G. Rowsell, Staines; David J. Spring, Slough, and Roger Hems, Maidenhead, all of England, assignors to Wilkinson Sword Limited, London, England

Filed Dec. 9, 1974, Ser. No. 530,721
Claims priority, application United Kingdom, Dec. 12, 1973, 57528/73
Int. Cl.[3] A61K *7/22*
U.S. Cl. 424—54 15 Claims

1. A consumer product for application to or consumption by the human body comprising a consumer product base and, as adjuvants in said base, (i) at least one of the following: a flavourant, colourant, perfuming agent, surface active agent or anti-

septic agent, and (ii) an ingredient capable of stimulating the cold receptors of the nervous system of the surface tissues of the body in those parts of the human body with which the product comes in contact during use, the improvement which comprises using as the cold receptor stimulating ingredient an effective amount of a cold receptor stimulating alicyclic amide of the formula:



where n is 0 or an integer of from 2–6 inclusive;

x has a value of 1, 2 or 3;

R is C_1–C_5 alkyl, at least one R group being in a 1, 2 or 3-position relative to X and the total number of carbon atoms provided by the R groups and the carbocycle to which they are attached being from 8–14;

X is CONR″R‴, where R″ is H or C_1–C_{10} alkyl; and R‴ is H, C_1–C_{10} alkyl or hydroxyalkyl, or alkylcarboxyalkyl of up to 8 carbon atoms, with the proviso that when R″ is H, R‴ may also be cycloalkyl of up to 8 carbon atoms, phenyl or substituted phenyl containing alkyl, hydroxy, or methoxy substituents and a total of up to 10 carbon atoms.

4,248,860

DENTIFRICES AND THEIR PREPARATION

Charles A. Watson, Ruislip, England, assignor to Lever Brothers Company, New York, N.Y.

Filed Nov. 2, 1979, Ser. No. 90,702

Claims priority, application United Kingdom, Nov. 1, 1978, 42771/78; Oct. 11, 1979, 35265/79

Int. Cl.³ A61K *7/16*

U.S. Cl. 424—57 **20 Claims**

1. In a dentifrice composition comprising a dental abrasive and an orally-acceptable carrier therefor, the improvement wherein the dental abrasive comprises abrasive particles of alpha-alumina monohydrate (boehmite).

4,248,861

SKIN TREATMENT METHODS

Steven R. Schutt, 1080 Cambridge Rd., Teaneck, N.J. 07666

Division of Ser. No. 861,304, Dec. 16, 1977, Pat. No. 4,154,823, which is a continuation of Ser. No. 694,769, Jun. 10, 1976, abandoned, which is a continuation-in-part of Ser. No. 533,534, Dec. 17, 1974, abandoned. This application Feb. 21, 1979, Ser. No. 13,467

Int. Cl.³ A61K *7/44*

U.S. Cl. 424—60 **4 Claims**

1. A method for preventing deleterious effects of solar radiation having wavelengths in the range of 2950 A to 3150 A on a human body comprising covering human skin with an effective amount of a composition comprising, approximately by weight, 5 to 20 parts of para-amino benzoic acid, 1 to 10 parts of calcium-d-pantothenate, and 0.5 to 1.5 parts of an alpha tocopherol compound, in a cosmetically acceptable carrier, said composition containing a sufficient amount of said alpha tocopherol compound to assay out at about 150 to 500 I.U. of vitamin E per fluid ounce.

4,248,862

IMMUNOGENIC CELL ENVELOPE PREPARATIONS

Derek C. Ellwood; Richard J. Manchee, and Andrew Robinson, all of Salisbury, England, assignors to The Secretary of State in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Feb. 16, 1979, Ser. No. 12,857

Claims priority, application United Kingdom, Feb. 17, 1978, 6462/78

Int. Cl.³ A61K *39/10*

U.S. Cl. 424—92 **12 Claims**

1. In a process for producing an antigenically-active cell envelope preparation from bacterial cells of the species *Bordetella pertussis* comprising disrupting the cells, separating the resulting cell envelopes from the other cell components, extracting the separated envelopes with a surfactant extraction solution and precipitating the cell envelope preparation from the resulting extract, the improvement which comprises extracting the said separated envelopes with a solution containing a zwitterionic surfactant selected from the group consisting of an N,N,N-trialkyl glycine and an N,N,N-trialkyl amine oxide.

4,248,863

ANTIBIOTICS SAFRAMYCINS A, B, C, D AND E AND PROCESS FOR PRODUCING THE SAME

Tadashi Arai, No. 50-6, 6-chome, Nogata, Nakano-ku, Tokyo, Japan

Filed Sep. 6, 1978, Ser. No. 940,031

Claims priority, application Japan, Sep. 12, 1977, 52/109692

Int. Cl.³ A61K *35/00*

U.S. Cl. 424—121 **10 Claims**

1. An antibiotic substance, saframycin A, having the following physico-chemical characteristics:

Color and appearance:

Yellow powder in saframycin A base form;

Melting point:

122°–126° C.;

Elementary analysis:

C: 61.47%, H: 5.41%, N: 9.33%;

Molecular weight according to mass spectrum:

562;

Empirical formula:

$C_{29}H_{30}N_4O_8.2/5\ H_2O$;

Specific rotation:

$[\alpha]_D^{20} = +18.2°$ (C=1.0, methanol);

Ultraviolet absorption spectrum as shown in FIG. 1:

UV $\lambda_{max}^{methanol}$ nm (log ϵ): 267 (4.34) $\lambda_{min}^{methanol}$ nm (log ϵ): 230 (3.88);

Infrared absorption spectrum as shown in FIG. 2:

IR $\lambda_{max}^{CHCl_3}$ cm^{-1}: 3400, 1716, 1685, 1660, 1615;

NMR spectrum ($CDCl_3$) as shown in FIG. 3:

δ: 1.90 (3H, S), 1.98 (3H, S), 2.24 (3H, S), 2.30 (3H, S), 4.04 (6H, S), 6.65 (3H, bs);

Solubility:

Easily soluble: Esters, chloroform, acetone, alcohols

Sparingly soluble: Ethyl ether

Insoluble: Water, n-hexane; and

Color reaction:

Positive in Dragendorff reaction; negative in ninhydrin, perchloroiron and anthrone reactions.

4,248,864

REPRODUCTION CONTROL

Robert C. Jones, Narberth, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Aug. 30, 1979, Ser. No. 71,207

Int. Cl.³ A61K *37/00*; C07C *103/52*

U.S. Cl. 424—177 **14 Claims**

1. A method for preventing reproduction which comprises contacting a fertilized ovum surrounded by its zona pellucida

in the oviduct or uterine lumen of a female mammal with a claudogenil amount of LHRH or an agonist thereof.

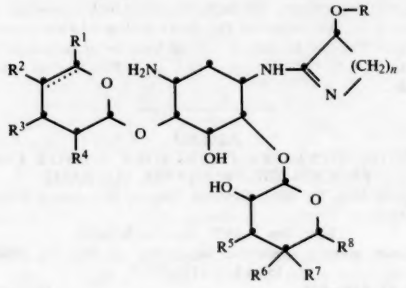
4,248,865

NOVEL AMINOGLYCOSIDE DERIVATIVES

Kikuo Igarashi, Itami, and Tsunetoshi Honma, Ikoma, both of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Aug. 20, 1979, Ser. No. 68,104
Claims priority, application Japan, Sep. 11, 1978, 53-112119
Int. Cl.³ A61K *31/71*; C07H *15/22*
U.S. Cl. 424—180 **11 Claims**

1. A member selected from the group consisting of (a) an aminoglycoside derivative represented by the formula:



wherein

R is hydrogen or C_1 to C_6 alkanoyl;

n is an integer of 1 to 3;

R^1 is aminomethyl, hydroxymethyl, 1-aminoethyl, or 1-methylaminoethyl;

R^2, R^3 and R^6 each is hydrogen or hydroxy;

R^4 is hydroxy or amino;

R^5 is amino or methylamino;

R^7 is hydroxy or methyl;

R^8 is hydrogen, hydroxymethyl or carbamoyloxymethyl; and

the dotted line represents the presence or absence of a double bond; provided that when the dotted line represents the presence of a double bond, R^5 is methylamino and provided further that R^6 and R^7 are not both hydroxy, and (b) a non-toxic acid addition salt thereof.

11. A method for treating a bacterial infectious disease of humans or other species of animals which comprises administering to said human or other species of animal a bactericidally effective amount of a compound or salt thereof as defined in claim **1**.

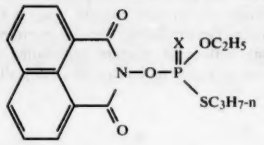
4,248,866

COMBATING ARTHROPODS WITH N-(O-ETHYL-S-N-PROPYL-THIOPHOSPHORYLOXY)-NAPHTHALIMIDES

Christa Fest; Hellmut Hoffmann, both of Wuppertal; Ingeborg Hammann, Cologne, and Wilhelm Stendel, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 10, 1979, Ser. No. 65,683
Claims priority, application Fed. Rep. of Germany, Aug. 19, 1978, 2836328
Int. Cl.³ A01N *57/00, 57/26*; C07F *9/06*
U.S. Cl. 424—200 **7 Claims**

1. A N-(O-ethyl-S-n-propyl-thiophosphoryloxy)-naphthalimide of the formula



in which

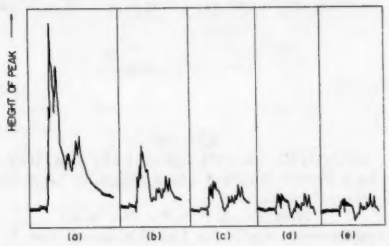
X is oxygen or sulphur.

4,248,867

STABILIZED OILY PREPARATION OF 1α-HYDROXY-VITAMIN D AND METHOD FOR MANUFACTURING THE SAME

Heizi Ikushima, Kawaguchi; Kazuo Igusa, Tokorozawa, and Sadao Bessho, Tokyo, all of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 14, 1978, Ser. No. 915,987
Claims priority, application Japan, Sep. 29, 1977, 52/116054
Int. Cl.³ A61K *31/59*
U.S. Cl. 424—236 **8 Claims**



1. A method for manufacturing a stabilized oily preparation which comprises irradiating a triglyceride of saturated middle chain fatty acid(s) with light longer than 290 nm, and dissolving a 1α-hydroxy-vitamin D in the treated triglyceride.

8. A stabilized oily preparation produced in accordance with the process of claims **1**, **2**, **3**, **4**, **5**, **6** or **7**.

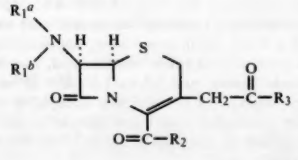
4,248,868

CEPHEM CARBONYLMETHYL DERIVATIVES

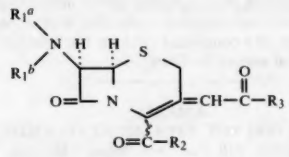
Riccardo Scartazzini, Allschwil, and Hans Bickel, Binningen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 715,084, Aug. 17, 1976, abandoned. This application Feb. 23, 1979, Ser. No. 14,454
Claims priority, application Switzerland, Aug. 22, 1975, 10904/75
Int. Cl.³ C07D *501/20*
U.S. Cl. 424—246 **23 Claims**

1. A member selected from the group consisting of 7β-amino-3-cephem-3-carbonylmethyl-4-carboxylic acid compounds of the formula



and corresponding 7β-amino-3-carbonylmethylene-cephem-4-carboxylic acid compounds of the formula



(IB)

and 1-oxides and pharmacologically acceptable salts of such compounds, in which $R_1{}^a$ represents a member selected from the group consisting of hydrogen and an acyl radical of the formula A

$$R_a—C(R_b)(R_c)—C(=O)— \quad (A)$$

in which R_a represents phenyl, thienyl, furyl, cyclohexadienyl or cyclohexenyl or phenyl, thienyl, furyl, cyclohexadienyl or cyclohexenyl, substituted by aminomethyl, in which the amino group may be free or protected by one of the amino protecting groups triphenylmethyl, tri-lower alkylsilyl or tri-lower alkylstannyl, lower alkoxy carbonyl, which is multiple branched and/or phenyl substituted in the α-position, benzoyl-methoxycarbonyl, a lower alkoxycarbonyl substituted in the β-position by halogen atoms, adamamtyloxycarbonyl, lower alkoxycarbonyl mono- or polysubstituted in the α-position by phenyl or p-nitrophenyl, and furfuryloxycarbonyl, or phenyl substituted by hydroxyl, or amino lower alkylated or sulphonated, or amino protected by an amino protecting group as defined above, R_b represents hydrogen and R_c represents hydrogen, hydroxyl, or hydroxyl protected by one of the hydroxyl protecting groups, lower-alkoxy-carbonyl which is multiple branched and/or phenyl substituted in the α-position, benzoyl-methoxycarbonyl, a lower alkoxycarbonyl, substituted in the β-position by halogen atoms, adamamtyloxycarbonyl, lower alkoxy-carbonyl mono- or polysubstituted in the α-position by phenyl or p-nitrophenyl, furfuryloxycarbonyl, tri-lower alkyl-substituted silyl or stannyl and benzyl or diphenylmethyl, unsubstituted or substituted by methoxy, halogen, or nitro, an amino group, an amino group protected as mentioned before, and sulpho, or sulpho protected by tri-loweralkyl-silyl- or stannyl, by nitrobenzyl or by diphenylmethyl, or a group (A) in which R_a represents cyano, pyridylthio, tetrazolyl, phenoxy or phenoxy in which phenyl is substituted like a phenyl group R_a, and R_b and R_c each represent hydrogen, or a group (A), in which R_a represents phenyl, thienyl, furyl, and R_b and R_c together denote lower alkoxyimino, cycloalkoxyimino and phenyl-lower alkoxyimino in the syn-configuration, $R_1{}^b$ represents hydrogen, R_2 represents hydroxyl, α-poly-branched lower alkoxy, 2-iodo-lower alkoxy, phenacyloxy, 1-phenyl-lower alkoxy which has 1-3 phenyl radicals, or 1-3 phenyl radicals which are substituted by lower alkoxy or nitro, lower alkanoyloxymethoxy, α-amino-lower alkanoyloxymethoxy or 2-phthalidyloxy, or tris-lower alkylsilyloxy, and R_3 represents hydrogen, lower alkyl, cycloalkyl, phenyl, phenyl substituted by lower alkyl, lower alkoxy or halogen, phenyl-lower alkyl, in which the phenyl nucleus is unsubstituted or substituted by nitro, lower alkyl, lower alkoxy or halogen, hydroxyl, lower alkoxy, amino, lower alkylamino, di-lower alkylamino, lower alkyleneamino, oxa-lower alkylenamino, phenylamino, hydroxylamino, lower alkoxyamino, hydrazino, 2-lower alkylnydrazino, 2-phenylhydrazino, 2-phenylhydrazino, 4-lower alkylpiperazin-1-ylamino, lower alkylamino wherein loweralkyl is substituted by amino and carboxyl, lower alkylamino wherein lower alkyl is substituted by carboxyl, or heterocyclylamino, wherein the heterocycyl radical is selected from the group consisting of pyridyl, pyridyl-1-oxide, pyrazinyl, pyrimidyl, pyridazinyl, thiadiazolyl, 2-methylthiadiazolyl, oxadiazolyl, tetrazolyl or N-methyl tetrazolyl.

4,248,869

PHENYL ISOTHIOCYANATE DERIVATIVES AND THEIR PRODUCTION

Masaru Ogata, Kobe; Yoshihachi Watanabe, Shiga; Hiroshi Matsumoto, Takatsuki, and Katsuya Tawara, Ibaraki, all of Japan, assignors to Shionogi & Co., Ltd., Japan

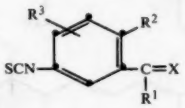
Filed Sep. 25, 1978, Ser. No. 946,422

Claims priority, application Japan, Oct. 4, 1977, 52-119789

Int. Cl.[3] **A01N** *41/00;* **C07D** *307/64;* **C07C** *161/04;* **C07D** *265/00*

U.S. Cl. 424—248.5 **18 Claims**

1. A compound of the formula:



wherein

X is oxygen or sulfur;

R^1 is phenoxy, amino, methylamino, ethylamino, propylamino, isopropylamino, butylamino, dimethylamino, methylethylamino, diethylamino, ethylbutylamino, dibutylamino, phenylamino, tolylamino, xylylamino, mesitylamino, cumenylamino, tetrahydrofurfurylamino, morpholino or methylpiperazino, but when X is sulfur R^1 is amino, methylamino, ethylamino, propylamino, isopropylamino, butylamino, dimethylamino, methylethylamino, diethylamino, ethylbutylamino, dibutylamino, or morpholino;

R^2 is methoxy, ethoxy, propoxy, isopropoxy, butoxy, isobutoxy or t-butoxy;

R^3 is hydrogen, methyl, ethyl, propyl, isopropyl, butyl, isobutyl, t-butyl, methoxy, ethoxy, propoxy, isopropoxy, butoxy, isobutoxy, t-butoxy, dimethylamino, methylethylamino, diethylamino, ethylbutylamino, dibutylamino, fluoro, chloro, bromo or iodo;

and salts thereof.

4,248,870

MAYTANSINOIDS AND USE

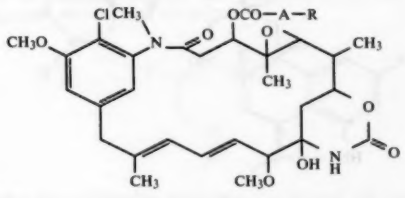
Osamu Miyashita, Osaka, and Hiroshi Akimoto, Hyogo, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Oct. 18, 1979, Ser. No. 85,880

Int. Cl.[3] **A61K** *31/535;* **C07D** *498/16*

U.S. Cl. 424—248.54 **13 Claims**

1. A compound of the formula:

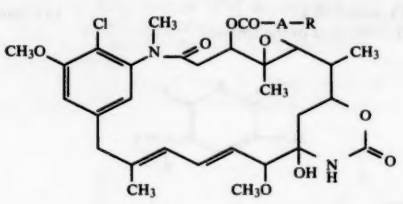


wherein

R is C_{3-10} cycloalkyl, C_{3-10} cycloalkenyl, phenyl or a heterocyclic group selected from the class consisting of pyridyl, pyrrolidinyl, tetrazolyl, furyl and thienyl, said cycloalkyl, cycloalkenyl, phenyl and heterocyclic group being unsubstituted or substituted by C_{1-4} alkyl, C_{1-4} alkoxy, C_{2-4} alkanoyl, C_{2-4} alkanoyloxy, C_{2-4} alkoxycarbonyl, halogen, nitro, cyano, trifluoromethyl, di-C_{1-4} alkylamino, C_{1-4} alkylthio, methylsulfinyl, methylsulfonyl, oxo, thioxo or C_{1-4} alkanoylamido, and

A is C_{1-4} alkylene or a bond, provided that A means said alkylene when attached to a N atom in said heterocyclic group R.

12. A pharmaceutical composition suitable for inhibiting the growth of tumour cells and prolonging the survival time of a warm-blooded animal which comprises as an active ingredient an effective amount of a compound of the following formula (I) and a pharmaceutically acceptable carrier or diluent therefor:



(I)

wherein

R is C_{3-10} cycloalkyl, C_{3-10} cycloalkenyl, phenyl or a heterocyclic group selected from the class consisting of pyridinyl, pyrrolidinyl, tetrazolyl, furyl and thienyl, said cycloalkyl, cycloalkenyl, phenyl and heterocyclic group being unsubstituted or substituted by C_{1-4} alkyl, C_{1-4} alkoxy, C_{2-4} alkanoyl, C_{2-4} alkanoyloxy, C_{2-4} alkoxycarbonyl, halogen, nitro, cyano, trifluoromethyl, di-C_{1-4} alkylamino, C_{1-4} alkylthio, methylsulfinyl, methylsulfonyl, oxo, thioxo or C_{1-4} alkanoylamido, and

A is C_{1-4} alkylene or a bond, provided that A means said alkylene when attached to a N atom in said heterocyclic group R.

4,248,871

N-9,10-DIHYDROLYSERGYL-M-AMINOBENZOIC ACID AMIDE DERIVATIVE

Paul Stadler, Biel-Benken, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

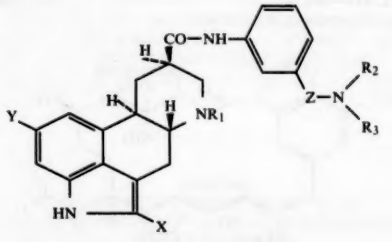
Division of Ser. No. 872,639, Jan. 26, 1978, Pat. No. 4,180,581. This application Jun. 4, 1979, Ser. No. 44,916

Claims priority, application Switzerland, Jan. 28, 1977, 1070/77

Int. Cl.[3] **A61K** *31/495;* **C07D** *457/06*

U.S. Cl. 421—250 **5 Claims**

1. A compound of formula I,



I

wherein

X is hydrogen, chlorine or bromine and

Y is hydrogen or bromine, with the proviso that when X is chlorine Y is hydrogen,

Z is carbonyl or sulphonyl,

R_1 is alkyl of 1 to 4 carbon atoms, and

R_2 together with R_3 is

$$-(CH_2)_2-A-(CH_2)_2-$$

wherein A is oxygen, sulphur or NR_8 wherein R_8 is hydrogen, alkyl of 1 to 4 carbon atoms, phenyl or phenyl monosubstituted by alkoxy of 1 to 4 carbon atoms,

or a pharmaceutically acceptable acid addition salt thereof.

2. A pharmaceutical compositon useful in treating orthostatic hypotension or migraine comprising a theropeutically effective amount of a compound of claim **1** in association with a pharmaceutical carrier or diluent.

4,248,872

METHOD FOR THE TREATMENT OF ANXIETY

David F. Horrobin, 110 Pine Ave. West, Montreal, Canada (H2W 1R7)

Filed Aug. 24, 1979, Ser. No. 69,493

Claims priority, application United Kingdom, Sep. 1, 1978, 35313/78

Int. Cl.[3] **A61K** *31/505*

U.S. Cl. 424—251 **3 Claims**

1. A method for the treatment of anxiety in a subject having an anxiety which method comprises administering to said subject an amount of dipyridamole effective to control said anxiety.

4,248,873

NITRO-SUBSTITUTED 1,4-DIHYDROPYRIDINES, PROCESSES FOR THEIR PRODUCTION AND THEIR MEDICINAL USE

Friedrich Bossert; Gerhard Franckowiak; Arend Heise; Stanislav Kazda; Horst Meyer; Kurt Stoepel; Robertson Towart, and Egbert Wehinger, all of Wuppertal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

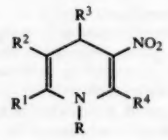
Filed Nov. 6, 1978, Ser. No. 958,239

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1977, 2752820

Int. Cl.[3] **A61K** *31/44;* **C01D** *211/84*

U.S. Cl. 424—256 **11 Claims**

1. A nitro-substituted 1,4-dihydropyridine of the general formula



I

in which

R represents hydrogen, a straight-chain or branched alkyl radical having 1 to 8 carbon atoms, which is optionally interrupted in the alkyl chain by one or two oxygen atoms to form oxa- or dioxa-substituents, or represents a phenyl or benzyl radical

R^1 and R^4 independently denote hydrogen, a straight-chain or branched alkyl radical with 1 to 4 carbon atoms, or a phenyl or benzyl radical,

R^2 represents hydrogen or a nitro group, or denotes a group COR^5,

in which

R^5 represents a C_1–C_4-alkyl, phenyl or benzyl radical or a group OR^6,

in which

R^6 represents a straight-chain, branched or cyclic, saturated or unsaturated hydrocarbon radical with up to 8 carbon atoms, which is optionally interrupted in the chain by 1 or 2 oxygen or sulphur atoms to form oxa-, thia, dioxa- or dithia-substituents or in which one hydrogen atom is replaced by a hydroxyl group or by a phenoxy or phenyl group which is optionally substituted by halogen, cyano, amino, alkylamino or dialkylamino with 1 to 2 carbon atoms per alkyl group, alkoxy with 1 to 4 carbon atoms,

alkyl with 1 to 4 carbon atoms, trifluoromethyl or nitro, or by an amino group, this amino group optionally carrying either hydrogen and one substituent or two identical or different substituents selected from alkyl with 1 to 4 carbon atoms, alkoxyalkyl with up to 4 carbon atoms, phenyl and benzyl, or

R^6 represents a phenyl group which is optionally substituted by 1 or 2 identical or different substituents selected from alkyl with 1 to 4 carbon atoms, phenyl, benzyl, alkoxy with 1 to 4 carbon atoms, halogen, cyano, nitro, trifluoromethyl, trifluoromethoxy, amino and alkylamino with 1 to 4 carbon atoms, and

R^3 represents a phenyl or naphthyl radical optionally containing 1 or 2 identical or different substituents selected from phenyl, alkyl with 1 to 8 carbon atoms, alkenyl or alkinyl each with 2 to 6 carbon atoms, alkoxy with 1 to 4 carbon atoms, alkenoxy or alkinoxy with 2 to 6 carbon atoms, dioxymethylene, halogen, trifluoromethyl, trifluoromethoxy, hydroxyl, amino, alkylamino with 1 to 4 carbon atoms, nitro, cyano, azido, carboxyl, carbalkoxy with 2 to 4 carbon atoms, carboxamido, sulphonamido, SO_m alkyl with 1 to 4 carbon atoms, and SO_m-trifluoroalkyl

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4,248,874

BENZOPYRANO COMPOUNDS AS ANTIGLAUCOMA AGENTS

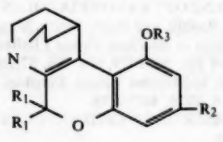
Anthony T. Dren, Waukegan, and Barbara A. Bopp, Lake Bluff, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Division of Ser. No. 948,058, Oct. 2, 1978, which is a division of Ser. No. 711,749, Aug. 4, 1976, Pat. No. 4,136,183. This application Jan. 17, 1980, Ser. No. 112,973

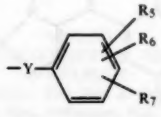
Int. Cl.³ A61K *31/435*

U.S. Cl. 424—256 **1 Claim**

1. A method of reducing intra-ocular pressure in mammalian patients comprising administering to a glaucoma patient a therapeutically effective amount of a compound of the formula



wherein each R_1 is loweralkyl and when taken together the substituents R_1R_1 form oxygen; R_2 is a C_1–C_{20} straight or branched chain alkyl, cycloalkyl, or



wherein Y is a straight or branched chain alkylene group having from 1 to 10 carbon atoms, each R_5, R_6 and R_7 are the same or different and are H, halo or loweralkyl; and R_3 is H.

4,248,875

PYRIDYL ESTERS AND THIOLESTERS OF α-SUBSTITUTED UNSATURATED ACIDS

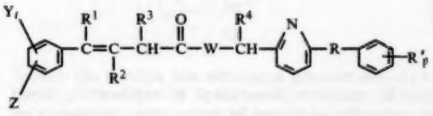
Clive A. Henrick, Palo Alto, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.

Filed Aug. 31, 1979, Ser. No. 71,435

Int. Cl.³ C07D *213/30, 213/32*

U.S. Cl. 424—263 **20 Claims**

1. A compound of the formula (A):



(A)

wherein,

p is zero, one or two;

t is zero, one, two, three or four;

W is oxygen or sulfur;

Y is independently selected from hydrogen, lower alkyl, lower haloalkyl, lower alkoxy, lower alkylthio, lower alkylcarbonyl, lower alkoxycarbonyl, lower acyloxy, halogen, cyano, nitro, and lower haloalkylthio;

Z is independently selected from the values of Y, cycloalkyl, and lower haloalkoxy; or Y and Z form a methylenedioxy group;

R is oxygen, sulfur, methylene or carbonyl;

R′ is fluoro, bromo, chloro, trifluoromethyl, methyl, methoxy or methylthio;

each of R^1 and R^2 is independently selected from hydrogen, chloro, fluoro, bromo, lower alkyl, lower alkenyl, lower alkoxy, cycloalkalkyl, and lower haloalkyl;

R^3 is lower alkyl of 2 to 5 carbon atoms, lower alkenyl of 2 to 5 carbon atoms, lower haloalkyl of 1 to 4 carbon atoms, lower haloalkenyl of 2 to 4 carbon atoms, or lower cycloalkyl of 3 or 4 carbon atoms;

R^4 is hydrogen, cyano, ethynyl, methyl, trifluoromethyl or thioamide; and the salt thereof of a strong inorganic acid or organic acid.

4,248,876

PIPERIDINE DERIVATIVES

Alan C. White, Windsor, England, assignor to John Wyeth & Brother Ltd., Taplow, England

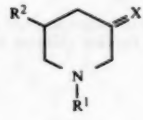
Filed Jan. 3, 1978, Ser. No. 866,311

Claims priority, application United Kingdom, Jan. 8, 1977, 00681/77; Nov. 19, 1977, 48272/77

Int. Cl.³ C07D *211/42*; A61K *31/445*

U.S. Cl. 424—267 **7 Claims**

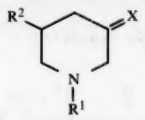
1. A compound selected from the group consisting of a piperidine derivative of the formula



and a pharmaceutically acceptable acid addition salt thereof, wherein R^1 represents (lower)alkyl, R^2 represents a phenyl group optionally substituted by one or more sustituents selected from the group consisting of (lower)alkyl, lower(alkoxy), halogen, amino, (lower)alkylamine, di(lower)alkylamino and trifluoromethyl and X is

where OR is hydroxy, or esterified hydroxy.

7. A pharmaceutical composition having anti-depressant activity comprising an anti-depressant effective amount of a compound selected from the group consisting of a piperidine derivative of the formula



and a pharmaceutically acceptable acid addition salt thereof, wherein R^1 represents (lower)alkyl, R^2 represents a phenyl group optionally substituted by one or more substituents selected from the group consisting of (lower)alkyl, lower(alkoxy), halogen, amino, (lower)alkylamino, di(lower)alkylamino or trifluoromethyl and X is

where OR is hydroxy, or esterified hydroxy, in association with a pharmaceutically acceptable carrier.

4,248,877

ORGANIC COMPOUNDS

Erwin Rissi, Basel, and Anton Ebnöther, Arlesheim, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

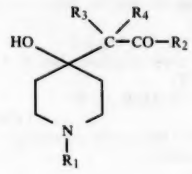
Division of Ser. No. 826,201, Aug. 19, 1977, which is a continuation-in-part of Ser. No. 650,105, Jan. 19, 1976, abandoned, which is a continuation-in-part of Ser. No. 479,850, May 14, 1974, abandoned. This application Feb. 22, 1979, Ser. No. 13,812

Claims priority, application Switzerland, Jun. 22, 1973, 9177/73; Jun. 28, 1973, 9414/73; Jun. 29, 1973, 9509/73; Jul. 2, 1973, 9598/73; Mar. 21, 1975, 3649/75; Mar. 21, 1975, 3650/75; Jan. 9, 1976, 215/76

Int. Cl.[3] **C07D** *211/48;* **A61K** *31/445*

U.S. Cl. 424—267 **19 Claims**

1. A compound of the formula,



wherein

R_1 is butyrophenone or butyrophenone mono-substituted in the phenyl ring by fluorine, chlorine, bromine, lower alkyl or lower alkoxy,

R_2 is an

group, wherein independently each of R_6 and R_7 is hydrogen, lower alkyl or cycloalkyl, phenyl, phenyl monosubstituted by fluorine, chlorine, bromine, lower alkyl or lower alkoxy, lower phenylalkyl or lower phenylalkyl monosubstituted in the phenyl ring by fluorine, chlorine, bromine, lower alkyl or lower alkoxy,

R_3 is lower alkyl or cycloalkyl, phenyl or phenyl monosubstituted by fluorine, chlorine, bromine, lower alkyl or lower alkoxy, and

R_4 is hydrogen or lower alkyl,

or a pharmaceutically acceptable acid addition salt thereof.

18. A method of treating pain and migraine in animals which comprises administering a therapeutically effective amount of a compound of claim 1 to an animal in need of such treatment.

19. A method of treating depressions in animals which comprises administering a therapeutically effective amount of a compound of claim 1 to an animal in need of such treatment.

4,248,878

IMIDAZOLE DERIVATIVES OF 1,5,6,11-TETRAHYDROBENZO[5,6]CYCLOHEPTA[1,2-b]PYRAZOLO[4,3-e]PYRIDINES

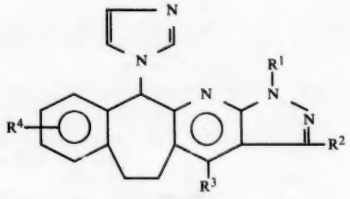
Hans Hoehn, Tegernheim, Fed. Rep. of Germany, assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Oct. 17, 1979, Ser. No. 86,019

Int. Cl.[3] **C07D** *471/04;* **A61K** *31/44*

U.S. Cl. 424—267 **8 Claims**

1. A compound of the formula



wherein R^1 and R^2 may be the same or different and each is hydrogen, lower alkyl, phenyl-lower alkyl, phenyl or substituted phenyl wherein the phenyl group bears one halogen, hydroxy, lower alkoxy, lower alkyl, lower alkylthio, cyano or nitro group, and R^3 and R^4 may be the same or different and each is hydrogen, halogen, lower alkyl or lower alkoxy, and non-toxic physiologically acceptable acid-addition salts thereof.

6. The compound as defined in claim 4 having the name 1-ethyl-1,5,6,11-tetrahydro-11-(1H-imidazol-1-yl)benzo[5,6-]cyclohepta[1,2-b]pyrazolo[4,3e]-pyridine or its hydrochloride salt.

4,248,879

BENZOPYRANOTRIAZOLES

Derek R. Buckle, Redhill, and Harry Smith, Maplehurst, both of England, assignors to Beecham Group Limited, England

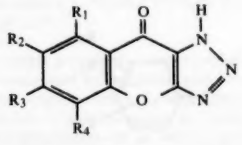
Filed Jul. 16, 1979, Ser. No. 57,955

Claims priority, application United Kingdom, Jul. 24, 1978, 30803/78; Nov. 16, 1978, 44719/78

Int. Cl.[3] **A61K** *31/41;* **C07D** *491/056, 491/153*

U.S. Cl. 424—269 **12 Claims**

1. A compound selected from the group consisting of a benzopyranotriazole of the formula:

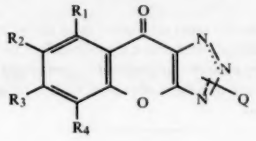


and pharmaceutically acceptable salts thereof, wherein each of R_1, R_2, R_3 and R_4 taken independently of the others is hydrogen, halo, nitro, lower alkyl or lower alkoxy, or any adjacent

two of R_1, R_2, R_3 and R_4 taken together are alkylene of from 3 to 5 carbon atoms or 1,4buta-1,3-dienylene.

11. A pharmaceutical composition comprising an antiallergically effective amount of a compound according to claim **1** and a pharmaceutically acceptable carrier.

12. A compound of the formula:



wherein each of R_1, R_2, R_3 and R_4 taken independently of the others is hydrogen, halo, nitro, lower alkyl or lower alkoxy, or any adjacent two of R_1, R_2, R_3 and R_4 taken together are alkylene of from 3 to 5 carbon atoms or ,4-buta-1,3-dienylene, and Q is benzyl substituted with alkoxy of 1 to 6 carbon atoms.

4,248,880

TREATMENT OF GASTRIC ULCERS WITH NAPHTHIMIDAZOLE DERIVATIVES

Anna Krasso, Basel, and Ernst-Peter Krebs, Bottmingen, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

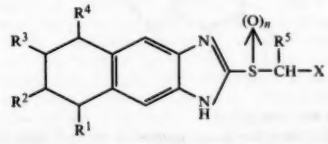
Division of Ser. No. 941,343, Sep. 11, 1978, Pat. No. 4,182,766. This application Jul. 2, 1979, Ser. No. 54,210

Claims priority, application Luxembourg, Sep. 19, 1977, 78140; Switzerland, Jul. 28, 1978, 8149/78

Int. Cl.[3] **A61K** *31/425, 31/415;* **C07D** *417/12, 403/12*

U.S. Cl. 424—270 **12 Claims**

12. A method for the treatment of gastric ulcers which comprises administering to a host requiring such treatment an amount effective therefor of compound of the formula



1

wherein R_1, R_2, R_3 and R_4 are each hydrogen or both of the pairs R_1 plus R_2 and R_3 plus R_4 are additional carbon to carbon bonds, n is 0 or 1, R_5 is hydrogen or lower alkyl and X is 2-imidazolyl, 2-imidazolinyl, 2-thiazolyl, 2-thiazolinyl, 4(5)-imidazolyl or 4(5)-imidazolyl substituted by a lower alkyl group

or a pharmaceutically acceptable acid addition salt thereof.

4,248,881

IMIDAZOLYLETHOXYMETHYL DERIVATIVES OF PYRAZOLE

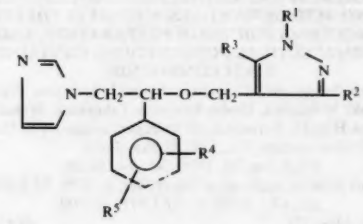
Hans Hoehn, Tegernheim, Fed. Rep. of Germany, assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Dec. 20, 1979, Ser. No. 105,688

Int. Cl.[3] **A01N** *43/50;* **C07D** *403/00*

U.S. Cl. 424—273 P **11 Claims**

1. A compound of the formula



wherein R^1 and R^2 may be the same or different and each is hydrogen, lower alkyl, phenyl-lower alkyl, phenyl, or substituted phenyl wherein the phenyl group bears one halogen, hydroxy, lower alkoxy, lower alkyl, lower alkylthio, cyano or nitro group, R^3 is halogen, and R^4 and R^5 may be the same or different and each is hydrogen, hydroxy, lower alkoxy, lower alkylthio or halogen, and non-toxic physiologically acceptable acid addition salts thereof.

10. An antimicrobial composition comprising an antimicrobially effective amount of a compound as defined in claim **1** and a pharmaceutically acceptable carrier therefor.

11. A method for treating bacterial or fungal infections in mammals which comprises administering to a mammalian host an anti-bacterial or antifungal effective amount of a compound as defined in claim **1**.

4,248,882

TREATING DIABETES-ASSOCIATED COMPLICATIONS WITH HYDANTOIN AMINES

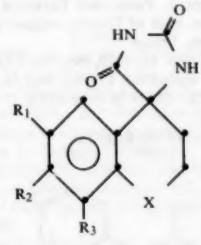
Reinhard Sarges, Mystic, and Rodney C. Schnur, Noank, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Feb. 12, 1980, Ser. No. 120,944

Int. Cl.[3] **A61K** *31/415, 31/47;* **C07D** *495/10, 491/107*

U.S. Cl. 424—273 R **22 Claims**

1. A compound of the formula



or a the pharmaceutically acceptable salt thereof; wherein X is oxygen, sulfur or >N—R, wherein

R is hydrogen or alkyl of 1 to 3 carbon atoms;

R_1 is chloro, bromo, fluoro or alkyl of 1 to 3 carbon atoms;

one of R_2 and R_3 is hydrogen; and the other of R_2 and R_3 is amino, monoalkylamino or dialkylamino, wherein each alkyl group has from 1 to 3 carbon atoms.

19. A method of treating diabetes-associated complications which comprises administering to a diabetic subject an effective amount of a compound of claim **1**.

4,248,883

1-(3-MERCAPTO-2-METHYLPROPANOYL)PROLYL AMINO ACID DERIVATIVES AND SALTS THEREOF, PROCESSES FOR THEIR PREPARATION, AND PHARMACEUTICAL COMPOSITIONS CONTAINING SUCH COMPOUNDS

Tadahiro Sawayama, Toyonaka; Hiroaki Kinugasa, Yawata; Haruki Nishimura, Ikeda; Kunihiko Takeyama, Ikoma, and Kanoo Hosoki, Toyonaka, all of Japan, assignors to Dainippon Pharmaceutical Co., Ltd., Osaka, Japan

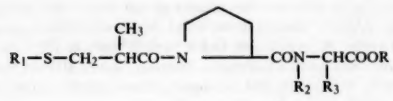
Filed Jun. 29, 1979, Ser. No. 53,206

Claims priority, application Japan, Jul. 6, 1978, 53-82809

Int. Cl.[3] **A61K** *31/40;* **C07D** *207/09*

U.S. Cl. 424—274 **40 Claims**

1. A compound of the formula



wherein

R represents hydrogen, lower alkyl, phenyl-lower alkyl or substituted phenyl-lower alkyl,

R_1 represents R_4CO—,

R_2 represents hydrogen or lower alkyl,

R_3 represents hydrogen, phenyl, lower alkyl, or substituted lower alkyl in which the substituent is hydroxy, phenyl-lower alkoxy, phenyl or hydroxyphenyl,

R_4 represents lower alkyl, phenyl, substituted phenyl, phenyl-lower alkyl or substituted phenyl-lower alkyl, the substituent in the substituted phenyl group in the foregoing definition being halogen, lower alkyl or lower alkoxy;

or a pharmaceutically acceptable salt thereof.

29. A method of treating hypertension in mammals which comprises administering an antihypertensive effective amount of a compound or a pharmaceutically acceptable salt thereof according to claim **1**.

4,248,884

2-PYRROLIDINE METHANOL DERIVATIVES UTILIZABLE AS MEDICAMENTS

Jean-Jacques Legrand, Paris, and Christain L. A. Renault, Epinay sur Seine, both of France, assignors to Pharmindustrie, Gennevilliers, France

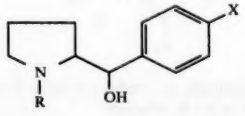
Filed Sep. 11, 1979, Ser. No. 74,470

Claims priority, application France, Sep. 22, 1978, 78 27178

Int. Cl.[3] **C07D** *207/08;* **A61K** *31/40*

U.S. Cl. 424—274 **7 Claims**

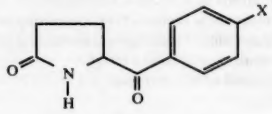
1. The compound of the formula:



(I)

in which X is hydrogen, a halogen atoms, an alkoxy group containing 1 to 4 carbon atoms, an alkyl group or cycloalkyl group containing 1 to 8 carbon atoms, and R represents hydrogen, an alkyl group containing 1 to 4 carbon atoms, or a phenylalkyl or hydroxyalkyl group in which the alkyl chain contains 1 to 4 carbon atoms.

4. The compounds of the formula:



in which X has the same definition as in claim **1**.

5. A medicament, useful as a hypolipemiant or psychotrope, which contains as active ingredient a compound according to claim **1** or a salt of said compound with a pharmaceutically acceptable acid.

4,248,885

SUBSTITUTED 2,3-ALKYLENE BIS(OXY) BENZAMIDES AND DERIVATIVES TO TREAT PSYCHOFUNCTIONAL DISORDERS

Michel Thominet; Gerard Bulteau, both of Paris; Jacques Acher, Itteville, and Claude Collignon, Saint Remy Les Chevreuse, all of France, assignors to Societe d'Etudes Scientifiques et Industrielles de l'Ile-de-France, Paris, France

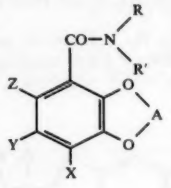
Division of Ser. No. 821,123, Aug. 2, 1977. This application Feb. 23, 1979, Ser. No. 14,678

Claims priority, application France, Aug. 4, 1976, 76 23835

Int. Cl.[3] **A61K** *31/40*

U.S. Cl. 424—274 **39 Claims**

1. A method of treatment of a pyschofunctional disorder comprising administering to a patient suffering from said psychofunctional disorder a therapeutically effective amount of a substituted 2,3-alkylene bis(oxy)benzamide, a pharmaceutically acceptable acid addition salt, a quaternary ammonium salt, an oxide, or a dextrorotatory or levorotatory isomer, having the formula:



wherein:

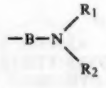
A is a C_{1-3} alkylene group;

X is selected from the group consisting of hydrogen, halogen, C_{1-4} alkoxy, nitro, amino, acetamino and azimido when joined to Y;

Y is selected from the group consisting of hydrogen, halogen, nitro, amino, acetamino, C_{1-4} alkylsulfonyl, sulfamoyl, C_{1-4} alkylsulfamoyl, C_{1-4} dialkylsulfamoyl and azimido when joined to X or Z;

Z is selected from the group consisting of hydrogen, halogen, nitro, amino, acetamino and azimido when joined to Y;

R is a group having the formula:



wherein:

B is a C_{1-3} alkylene group;

R_1 is joined to B to form a pyrrolidinyl group; and

R_2 is a C_{1-4} alkyl, C_{2-4} alkenyl, cycloalkyl or benzyl group;

R' is a hydrogen atom.

4,248,886
COMBATING FUNGI WITH N-OXALYL-N-PHENYL-AMINOACIDS AND ESTERS THEREOF

Winfried Lunkenheimer, Wuppertal, and Wilhelm Brandes, Leichlingen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

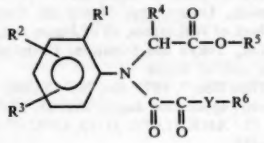
Filed Jul. 31, 1979, Ser. No. 62,400

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1978, 2836158

Int. Cl.[3] **A01N** *37/46, 43/20;* **C07C** *101/44;* **C07D** *303/40*

U.S. Cl. 424—278 **5 Claims**

1. An N-oxalyl-N-phenyl-aminoacid or ester thereof of the formula



in which

R^1 represents hydrogen, straight-chain or branched alkyl with 1 to 4 carbon atoms, fluorine, chlorine or bromine,

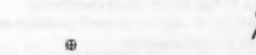
R^2 represents hydrogen or straight-chain or branched alkyl with 1 to 4 carbon atoms,

R^3 represents hydrogen or straight-chain or branched alkyl with 1 to 4 carbon atoms,

R^4 represents hydrogen, straight-chain or branched alkyl with 1 to 4 carbon atoms or optionally substituted phenyl, the substituent(s) being selected from halogen, alkyl with 1 to 2 carbon atoms and halogenoalkyl with up to 2 carbon atoms and up to 3 identical or different halogen atoms,

R^5 represents hydrogen, straight-chain or branched alkyl or cyanoalkyl, each with 1 to 6 carbon atoms, alkenyl or alkynyl, each with 2 to 4 carbon atoms, halogenoalkyl with 1 to 4 carbon atoms and up to 5 halogen atoms, cycloalkyl with 3 to 7 carbon atoms, cycloalkylalkyl with 3 to 7 carbon atoms in the cycloalkyl part and 1 to 4 carbon atoms in the alkyl part, alkoxyalkyl, alkoxyalkoxyalkyl, alkoxycarbonylalkyl, alkylthioalkyl alkylsulphinylalkyl and alkylsulphonylalkyl, each with 1 to 4 carbon atoms in each alkyl part, aryl with 6 to 10 carbon atoms which is optionally substituted or aralkyl which is optionally substituted in the aryl part and has 6 to 10 carbon atoms in the aryl part and 1 to 4 carbon atoms in the alkyl part, the substituents on said aryl or aralkyl being selected from halogen, alkyl with 1 to 2 carbon atoms and halogenoalkyl with up to 2 carbon atoms and up to 3 identical or different halogen atoms, or dialkylaminoalkyl with 1 to 4 carbon atoms in each alkyl part,

R^6 represents straight-chain or branched alkyl or cyanoalkyl, each with 1 to 6 carbon atoms, alkenyl or alkynyl, each with 2 to 4 carbon atoms, halogenoalkyl with 1 to 4 carbon atoms and up to 5 halogen atoms, cycloalkyl with 3 to 7 carbon atoms, cycloalkyl-alkyl with 3 to 7 carbon atoms in the cycloalkyl part and 1 to 4 carbon atoms in the alkyl part, alkoxyalkyl, alkoxyalkoxyalkyl, alkoxycarbonylalkyl, alkylthioalkyl, alkylsulphinylalkyl and alkylsulphonylalkyl, each with 1 to 4 carbon atoms in each alkyl part, aryl with 6 to 10 carbon atoms which is optionally substituted or aralkyl which is optionally substituted in the aryl part and has 6 to 10 carbon atoms in the aryl part and 1 to 4 carbon atoms in the alkyl part, the substituents on said aryl or aralkyl being selected from halogen, alkyl with 1 to 2 carbon atoms and halogenoalkyl with up to 2 carbon atoms and up to 3 identical or different halogen atoms, or dialkylaminoalkyl with 1 to 4 carbon atoms in each alkyl part, aroxyalkyl which is optionally substituted in the aryl part and has 6 to 10 carbon atoms in the aryl part and 1 to 4 carbon atoms in the alkyl part, the substituents being selected from halogen, alkyl with 1 to 2 carbon atoms and halogenoalkyl with up to 2 carbon atoms and up to 3 identical or different halogen atoms, or epoxyalkyl with a total of 3 to 8 carbon atoms, or a group of the formula



R^7, R^8 and R^9, which need not be identical, each represent alkyl with 1 to 4 carbon atoms,

X represents alkylene with 1 to 4 carbon atoms or alkylidene with 2 to 4 carbon atoms,

Y represents oxygen or sulphur and

Z represents the anion of an inorganic or organic acid.

4. A method of combating fungi which comprises applying to the fungi or to a habitat thereof, a fungicidally effective amount of a compound according to claim 1.

4,248,887
ANTIBACTERIAL COMPOUNDS, PROCESSES FOR THEIR PREPARATION AND COMPOSITIONS CONTAINING THEM

Norman H. Rogers, Rudgwick, and Peter J. O'Hanlon, Redhill, both of England, assignors to Beecham Group Limited, England

Filed Mar. 19, 1979, Ser. No. 21,712

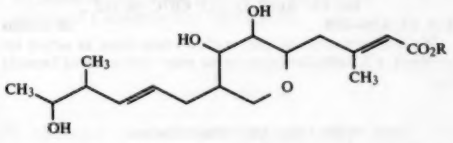
Claims priority, application United Kingdom, Apr. 21, 1978, 15807/78

The portion of the term of this patent subsequent to May 27, 1997, has been disclaimed.

Int. Cl.[3] **C07D** *309/06;* **A61K** *31/35*

U.S. Cl. 424—283 **10 Claims**

1. A compound of formula:



wherein R is a pharmaceutically acceptable ester-forming radical, provided that R is not a group of formula $—(CH_2)_8CO_2H$, or a salt or ester thereof.

4,248,888
CHEMICAL COMPOUNDS

Istvan Szekely, Szentendre; Marianna Lovasz, nee Gaspar, Budapest; Gabor Kovacs, Budapest; Rudolf Soos, Budapest; Lajos Nagy, Szentendre, and Bela Köszegi, Budapest, all of Hungary, assignors to Chinoin Gyógyszer és Vegyészeti Termékek Gyára R.T., Budapest, Hungary

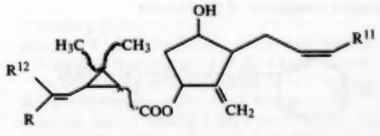
Filed Feb. 21, 1979, Ser. No. 13,069

Claims priority, application Hungary, Feb. 23, 1978, CI-1813

Int. Cl.[3] **C07C** *69/747, 69/743;* **A01N** *53/00*

U.S. Cl. 424—306 **7 Claims**

1. An optically active or racemic compound of the formula I



(I)

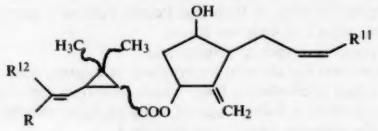
wherein

R^{11} is a straight or branched chain lower alkyl or 1-alkenyl or hydrogen;

R and R^{12} are the same or different and are hydrogen, halogen, straight or branched chain lower alkyl, or one of the moieties R and R^{12} is lower alkoxycarbonyl;

the ~ bonds represent α- and/or β-configuration and the — bonds represent β-configuration.

5. An insecticidal composition comprising as active ingredient an effective amount of at least one compound of the formula I



(I)

wherein

R^{11} is a straight or branched chain lower alkyl or 1-alkenyl or hydrogen;

R and R^{12} are the same or different and are hydrogen, halogen, straight or branched chain lower alkyl, or one of the moieties R and R^{12} is lower alkoxycarbonyl;

the bonds represent α- and/or β-configuration and the — bonds represent β-configuration, in admixture with an inert solid, liquid or gaseous carrier.

4,248,889

3,5-DIHYDROXYPENTANOIC ESTER DERIVATIVES HAVING ANTIHYPERLIPAEMIC ACTIVITY

Hidehiko Oka; Akira Terahara, and Akira Endo, all of Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

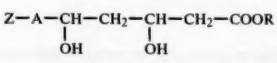
Filed Oct. 26, 1979, Ser. No. 88,619

Claims priority, application Japan, Oct. 30, 1978, 53-133407

Int. Cl.[3] **A61K** *31/215;* **C07C** *69/732*

U.S. Cl. 424—308 **28 Claims**

26. A pharmaceutical preparation comprising as active ingredient, a 3,5-dihydroxypentanoic ester derivative of formula (I):



(I)

(wherein:

A represents an alkylene group, an alkylene group having one or more alkyl substituents, or an alkenylene group;

Z represents a halo or alkyl substituted or unsubstituted aryl or aryloxy group; and

R represents a C_1–C_4 alkyl group), together with a pharmaceutically acceptable carrier or excipient.

4,248,890

L-CYSTEINE DERIVATIVES AND MEDICAMENTS CONTAINING THEM

Jean-Pierre Maffrand, Portet-sur-Garonne, France, assignor to Parcor, Paris, France

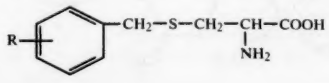
Filed Jun. 5, 1979, Ser. No. 45,771

Claims priority, application France, Jun. 22, 1978, 78 18693

Int. Cl.[3] **C07C** *149/42;* **A61K** *31/195*

U.S. Cl. 424—309 **13 Claims**

1. L-cysteine compound of the formula



in which R is lower alkoxycarbonyl or carboxy or a pharmaceutically acceptable salt thereof.

6. A mucolytic medicament comprising a pharmaceutically acceptable carrier and an effective amount of the compound of claim **1**.

4,248,891

1-(1-AMINOALKYL)TRICYCLO[4,3,1,$1^{2,5}$]UNDECANES

Yoshiaki Inamoto, Utsunomiya; Motoyoshi Osugi, and Eiji Kashihara, both of Wakayama, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo and Sumitomo Chemical Industries, Ltd., Osaka, both of, Japan

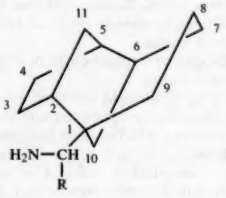
Filed Dec. 7, 1979, Ser. No. 102,000

Claims priority, application Japan, Dec. 15, 1978, 53-156178

Int. Cl.[3] **A61K** *31/205, 31/13;* **C07C** *87/40*

U.S. Cl. 424—316 **7 Claims**

1. A compound having the formula:



(I)

wherein R is lower alkyl, and acid addition salts thereof.

6. A pharmaceutical anti-viral composition which comprises as an active ingredient a pharmaceutically effective amount of at least one of compounds according to claim **1** and at least one pharmaceutical inert carrier or diluent.

4,248,892

ANTIFIBROTIC AGENT

Tsuneo Kanamaru, Takatsuki; Takenori Ishimaru, Suita, and Hisayoshi Okazaki, Kyoto, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

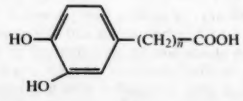
Filed Jun. 7, 1979, Ser. No. 46,632

Claims priority, application Japan, Jun. 9, 1978, 53/70159

Int. Cl.[3] **A61K** *31/19*

U.S. Cl. 424—317 **7 Claims**

1. A method for the prophylaxis or treatment of fibrosis due to excessive collagen accumulation in mammal, which comprises administering to mammal an effective amount of a compound of the formula



wherein n is equal to zero or 1, or its physiologically acceptable salt.

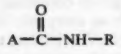
4,248,893

ARTERIAL WALL CHOLESTEROL ESTER REDUCING CYCLOPROPANYL-BEARING AMIDES

Faizulla G. Kathawala, West Orange, N.J., and John G. Heider, West Nyack, N.Y., assignors to Sandoz, Inc., E. Hanover, N.J.

Continuation-in-part of Ser. No. 872,836, Jan. 27, 1978, abandoned. This application Feb. 5, 1979, Ser. No. 9,473
Claims priority, application Fed. Rep. of Germany, Dec. 30, 1978, 2856856
Int. Cl.[3] A61K *31/165, 31/40;* C07C *103/20, 103/37*
U.S. Cl. 424—324 33 Claims

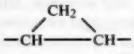
1. A compound of the formula:



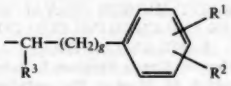
wherein A is an unsaturated fatty acid hydrocarbon chain of 7 to 23 carbon atoms in which each unsaturated ethylene moiety of the formula:

—CH=CH—

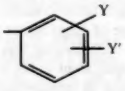
is replaced by a cyclopropanyl group of the formula



said A having 1 to 4 such cyclopropanyl groups; and R is:
(a) an aralkyl radical of the structure

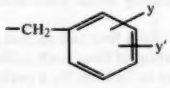


wherein g is 0 or 1;
wherein R^1 is a hydrogen atom, halo having an atomic weight of from about 19 to 80, alkoxy having from 1 to 3 carbon atoms; or alkyl having from 1 to 3 carbon atoms;
R^2 is a hydrogen atom, alkyl having from 1 to 3 carbon atoms, alkoxy having from 1 to 3 carbon atoms, or halo having an atomic weight of from about 19 to 36; and
R^3 is (i) a hydrogen atom,
a phenyl radical of the structure (ii)



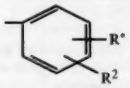
(ii)

wherein y is a hydrogen atom, halo having an atomic weight of from about 19 to 80, alkoxy having from 1 to 3 carbon atoms, or alkyl having from 1 to 3 carbon atoms; and
y' is a hydrogen atom, alkoxy having from 1 to 3 carbon atoms, alkyl having from 1 to 3 carbon atoms, or halo having an atomic weight of from about 19 to 36; or
a benzyl radical of the formula (iii)

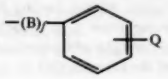


(iii)

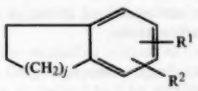
wherein y and y' are as defined above; or (iv) alkyl having from 1 to 8 carbon atoms;
or R is:
(b) a phenyl radical of the structure



wherein R^2 is as defined above, and
R^0 is a hydrogen atom, halo having an atomic weight of from about 19 to 80, alkyl having from 1 to 3 carbon atoms; alkoxy having from 1 to 3 carbon atoms; or a radical of the structure R^f:

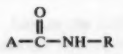


in which B is —CH_2— or —O—;
f is 0 or 1; and
Q is a hydrogen atom, halo having an atomic weight of from about 19 to 80, alkoxy having from 1 to 3 carbon atoms, or alkyl having from 1 to 3 carbon atoms;
or R is (c) a benzocycloalkyl nucleus of the structure:



wherein R^1 and R^2 are as defined above; and
j is a whole integer of from 1 to 4.

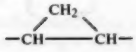
29. A method of reducing the cholesterol ester content of an arterial wall, in a mammal in need of such treatment, comprising administering to said mammal a cholesterol ester-reducing amount of a compound of the formula:



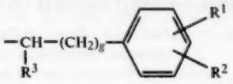
wherein A is an unsaturated fatty acid hydrocarbon chain of 7 to 23 carbon atoms in which each unsaturated ethylene moiety of the formula:

—CH=CH—

is replaced by a cyclopropanyl group of the formula

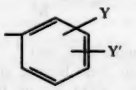


said A having 1 to 4 such cyclopropanyl groups; and
R is:
(a) an aralkyl radical of the structure



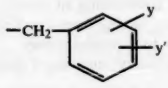
wherein g is 0 or 1;
wherein R^1 is a hydrogen atom, halo having an atomic weight of from about 19 to 80, alkoxy having from 1 to 3 carbon atoms; or alkyl having from 1 to 3 carbon atoms;
R^2 is a hydrogen atom, alkyl having from 1 to 3 carbon atoms, alkoxy having from 1 to 3 carbon atoms, or halo having an atomic weight of from about 19 to 36; and

R^3 is (i) a hydrogen atom,
a phenyl radical of the structure (ii)



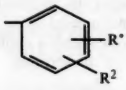
(ii)

wherein y is a hydrogen atom, halo having an atomic weight of from about 19 to 80, alkoxy having from 1 to 3 carbon atoms, an alkyl having from 1 to 3 carbon atoms; and
y' is a hydrogen atom, alkoxy having from 1 to 3 carbon atoms, alkyl having from 1 to 3 carbon atoms, or halo having an atomic weight of from about 19 to 36; or
a benzyl radical of the formula (iii)

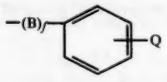


(iii)

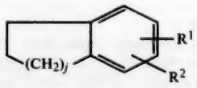
wherein y and y' are as defined above; or (iv) alkyl having from 1 to 8 carbon atoms;
or R is:
(b) a phenyl radical of the structure



wherein R^2 is as defined above, and
R^0 is a hydrogen atom, halo having an atomic weight of from about 19 to 80, alkyl having from 1 to 3 carbon atoms; alkoxy having from 1 to 3 carbon atoms; or a radical of the structure R/:



in which B is —CH_2— or —O—;
f is 0 or 1; and
Q is a hydrogen atom, halo having an atomic weight of from about 19 to 80, alkoxy having from 1 to 3 carbon atoms, or alkyl having from 1 to 3 carbon atoms;
or R is (c) a benzocycloalkyl nucleus of the structure:



wherein R^1 and R^2 are as defined above; and
j is a whole integer of from 1 to 4.

4,248,894

LONG-LASTING FLAVORED CHEWING GUM CONTAINING NON-SUGAR SWEETENER CODRIED ON CHALK OR OTHER FILLER AND METHOD

Donald A. M. Mackay, Pleasantville, N.Y.; Abraham I. Bakal, Parsippany, N.J., and John J. Stroz, Monroe, Conn., assignors to Life Savers, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 890,742, Mar. 27, 1978, abandoned, which is a continuation of Ser. No. 744,848, Nov. 24, 1976, abandoned. This application Jan. 17, 1979, Ser. No. 4,093
Int. Cl.³ A23G *3/30*
U.S. Cl. 426—3 **8 Claims**

1. A method for forming a long-lasting flavored chewing gum, which comprises codrying or coating a non-sugar sweetener selected from the group consisting of a saccharin sweetener or aspartame, with an inorganic filler selected from the group consisting of calcium carbonate, talc, magnesium trisilicate, diatomaceous earth, aluminum oxide or mixtures thereof, said non-sugar sweetener being employed in a weight ratio to the filler of from about 1:100 to about 1:10, combining the resulting combination with melted gum base ingredients to form a gum base, the non-sugar sweetener-filler combination being substantially uniformly dispersed througout and bound up in the gum base matrix, and mixing the gum base containing the non-sugar sweetener-filler combination with one or more flavors, sweeteners, emulsifiers and plasticizers to form a chewing gum wherein said inorganic filler and gum base provides a carrier for the non-sugar sweetener to control and slow release of said non-sugar sweetener from the gum base while substantially all of said filler remains in said gum base and is not released with said non-sugar sweetener.

4,248,895

DEHYDRATED HIGHER POLYALCOHOLS, COMESTIBLES AND CHEWING GUM CONTAINING SAME AND METHOD

John J. Stroz, Monroe, Conn.; Abraham I. Bakal, Parsippany, N.J., and Donald A. M. Mackay, Pleasantville, N.Y., assignors to Life Savers, Inc., New York, N.Y.

Filed Dec. 21, 1978, Ser. No. 972,121
Int. Cl.³ A23G *3/30*
U.S. Cl. 426—3 **18 Claims**

1. A substantially dry free-flowing particulate sweetener composition consisting essentially of a hydrogenated starch hydrolysate in admixture with a concentrated protein extract, said concentrated protein extract containing at least 90% protein and being selected from the group consisting of egg albumin, soy protein isolates, caseinates, oilseed proteins, whey proteins and leaf proteins, said hydrogenated starch hydrolysate being present in a weight ratio to said concentrated protein extract of within the range of from about 85:1 to about 5.5:1, said sweetener combination containing less than 6% water and having a sweetness level equivalent to the hydrogenated starch hydrolysate itself, and being in substantially dry free-flowing powder form.

4,248,896

PROCESS FOR BAKING BREAD

Leland C. Wallace, 3509 Casitas Ave., Los Angeles, Calif. 90039

Filed Mar. 1, 1979, Ser. No. 16,506
Int. Cl.³ A21D *6/00*
U.S. Cl. 426—19 **4 Claims**

1. A process for producing bread from weaker flour comprising:
   a. dividing said flour into a first and second portion;
   b. mixing said first portion of flour with sufficient water and allowing the mixture to hydrate for a period of time sufficient to produce a mass of wet gluten phase and starch slurry phase;
   c. separating said wet gluten phase and starch slurry phase;
   d. converting said starch slurry phase to sugar syrup;
   e. forming a dough utilizing said second portion of flour, said

wet gluten phase, said sugar syrup, and other essential bread making ingredients;

f. allowing dough to rise; and

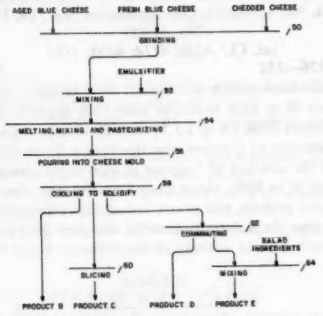
g. baking said dough to form a bread product.

4,248,897

PROCESSED BLUE CHEESE BLEND AND METHOD OF FORMATION

Lyle S. Christensen, Thorp, Wis., and Ocrel M. Russel, Pescadero, Calif., assignors to Patent Technology, Inc., San Francisco, Calif.

Filed Dec. 14, 1978, Ser. No. 969,317
Int. Cl.[3] A23C 9/12
U.S. Cl. 426—36 10 Claims



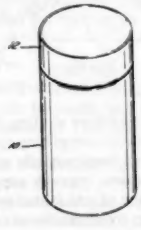
7. A pasteurized processed blue cheese blend of a fully aged blue cheese portion, pre-aged for at least sixty days prior to blending, and a substantially current second blue cheese portion, pre-aged for a time no greater than about 10 days prior to blending, together with emulsifier, said blue cheese blend including inactivated blue cheese mold dispersed uniformly throughout said blend without visible veins, the ratio of said first blue cheese portion to said second blue cheese portion being from about 0.3 to 1.5 parts by weight of the former to 1 part by weight of the latter, said cheese blend being characterized by having been blended in a molten condition and possessing an extended refrigerated shelf-life without significant off-flavor.

4,248,898

METHOD OF MAKING YOGURT

Frank Taylor, 9415 Central St., LaSalle, Quebec, Canada (H8R 2K4)

Filed May 29, 1979, Ser. No. 42,873
Claims priority, application Canada, May 31, 1978, 304515
Int. Cl.[3] A23C 9/12
U.S. Cl. 426—43 4 Claims



1. A method of making yogurt comprising, filling a container to a first pre-set level with milk, boiling an aqueous liquid, adding an amount of said boiling aqueous liquid to said milk to fill said container to a second pre-set level and to form a mixture of said milk and said liquid in a ratio so that said mixture is at a temperature of 112°–118° F., adding a yogurt culture to said mixture, placing said container containing said mixture at a temperature of between 112°–118° F. in an insulated vessel, maintaining said mixture in said container in said insulated vessel until the desired fermentation to form a yogurt is completed, said insulated vessel preventing said mixture from cooling below 100° F. for at least six hours from the time it is placed in said insulated vessel.

4,248,899

PROTECTED FEEDS FOR RUMINANTS

Cameron K. Lyon, Orinda; George O. Kohler, El Cerrito, both of Calif., and David A. Dinius, Bowie, Md., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Feb. 26, 1979, Ser. No. 15,491
Int. Cl.[3] A23K 1/14, 1/18
U.S. Cl. 426—98 7 Claims

1. A method of preparing a feed supplement for ruminant animals, which consists essentially of

(a) pressing leafy green vegetable material to separate a juice therefrom,

(b) mixing the juice of Step a with lipid material in a proportion of about 30 to 150 parts of juice to one part of lipid material,

(c) emulsifying the mixture of Step b by subjecting it to rapid high shearing action for a period of about 10 seconds to 5 minutes,

(d) coagulating the emulsified mixture of Step c by a method selected from the group consisting of (1) adjusting the pH of the mixture to about 3 to 4 by addition of an acid, (2) heating the mixture at a temperature of about 70°–100° C., and (3) adjusting the pH thereof to about 3 to 4 by addition of an acid and heating at a temperature of about 70°–100° C.,

(e) separating a coagulate from the mixture of Step d, and

(f) drying the coagulate of Step e at a temperature of about 80°–110° C. to a solids content of 85% or more.

4,248,900

INTERNALLY COATED TUBULAR CASING AND PROCESS FOR THE MANUFACTURE THEREOF

Klaus-Dieter Hammer, Mainz; Günter Gerigk, Oberursel, and Max Bytzek, Naurod, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 19, 1979, Ser. No. 50,086
Claims priority, application Fed. Rep. of Germany, Jun. 24, 1978, 2827862
Int. Cl.[3] A23G 1/00; B32B 9/06; B05D 3/02; A23L 1/31
U.S. Cl. 426—105 14 Claims

1. A packaging material, comprising a layer based on cellulose hydrate, said layer having a coating on one surface, said coating comprising a mixture of chemically different compounds comprising, as the first, major component thereof between about 20 and 200 mg/m^2 of a natural oil comprising a vegetable oil, a triglyceride mixture of saturated vegetable fatty acids having from about 4 to 14 carbon atoms in their carbon chain, or a mixture thereof and, as the second, minor component thereof, between about 5 and 150 mg/m^2 of a chemically modified starch, a partially saponified polyvinyl alcohol or a microcrystalline cellulose.

9. A packaging material according to claim 1, in the form of a tubular casing.

11. A process for the preparation of a tubular casing, comprising the steps of coating the inside of a tubular casing based on cellulose hydrate with an aqueous liquid comprising from about 0.2 to 8 percent by weight, based on the total weight of the liquid, of a chemically modified starch, a micro-crystalline cellulose, or a partially saponified polyvinyl alcohol, and from about 2 to 20 percent by weight, based on the total weight of

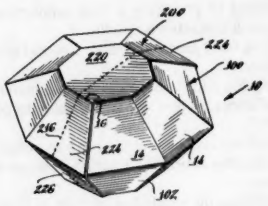
the liquid, of a natural oil, evaporating the volatile components of the liquid, the quantity of liquid applied being selected so that the coating formed on the surface of the tube after evaporation of the volatile components comprises a mixture of chemical compounds comprising a total of from about 20 to 200 mg of natural oil and a total of from about 5 to 150 mg of a chemically modified starch, a micro-crystalline cellulose, or a partially saponified polyvinyl alcohol, calculated per square meter of the surface of the tubular casing.

4,248,901

COMBINATION PACKAGE AND SLEEVE SUPPORT MEANS

John J. Austin, LaGrange, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Jan. 24, 1980, Ser. No. 115,020
Int. Cl.[3] B65D *71/00*
U.S. Cl. 426—119 **4 Claims**



1. A package comprising

a pair of non-metallic containers placed in face-to-face juxtaposition, each container housing an expandable food bag in a non-expanded, stored condition, said bag capable of being in an expanded condition having a substantially increased volume,

each of said containers including:

a base portion having

a bottom support panel of regular polygonal shape,

upwardly and outwardly extending side panels with a side panel connected to each edge of said polygonally shaped bottom support panel, each one of said side panels being connected to the adjacent one thereof to form with said bottom support panel a bowl containing an expandable food bag in store condition, and

an integral cover enclosing and storing an expandable food bag in each of said bowls and providing additional side support for the bag when opened and the bag is expanded,

the containers being positioned such that the covers of each of said containrs is placed in face-to-face contact one upon the other, and

a binder sleeve for holding the pair of said containers together as a unitized package in front-to-front juxtaposition and for supporting at least one of said containers above a plane surface when said containers are separated, said sleeve including:

a tube formed from an endless paperboard strip disposed around said containers holding said containers together; the tube having a pair of opposed undulating edges and a perforated score line bisecting the strip positioned equidistant from said undulating edges,

an undulating edge of said strip providing a raised seat for one of said containers, when separated, above a plane surface when said strip is separated along said score line and supported on the edge formed by said perforated score line;

said endless paperboard strip including a plurality of panels joined to each other along common score lines and defined by the opposing undulating edges; some of said paperboard strip panels in said tube being in the shape of a regular polygon complemental to the shape of said bottom support panels of said containers whereas others of said paperboard strip panels being in the shape of said side panels.

4,248,902

INTERMEDIATE-MOISTURE MEAT PRODUCTS

Kuttikandathil E. Eapen, and Marvin L. Kahn, both of Williamsville, N.Y., assignors to Rich Products Corporation, Buffalo, N.Y.

Continuation-in-part of Ser. No. 920,953, Jun. 30, 1978, Pat. No. 4,199,605, which is a continuation-in-part of Ser. No. 871,995, Jan. 24, 1978, Pat. No. 4,154,863, and Ser. No. 763,613, Jan. 28, 1977, Pat. No. 4,146,652. This application Mar. 19, 1979, Ser. No. 21,937
Int. Cl.[3] A23B *4/14*; A23L *1/31*
U.S. Cl. 426—332 **20 Claims**

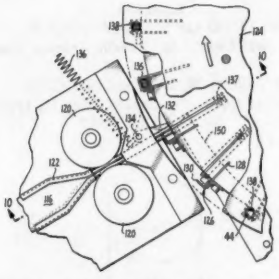
1. A microbiologically stable meat food product comprising about from 30 to 60% water, at least 10% sugar in a ratio to water of about from 1:6 to 1:1.5; wherein in said sugar component the amount of fructose plus dextrose is from about 50 to 75%, and the amount of fructose in said sugar component is from about 20 to 80%; about from 5 to 30% fat, about from 8 to 15% meat protein, and minor but effective amounts of salt, provided that the solutes content is adequate to provide the product with a water activity of about from 0.80 to 0.92.

4,248,903

METHOD FOR OBTAINING FOLDED STUFFING PIECES OF PIMENTO

John L. Margaroli, Oakland, and Frederick J. Cimperman, Castro Valley, both of Calif., assignors to Vistan Corporation, San Leandro, Calif.

Continuation of Ser. No. 923,376, Jul. 10, 1978. This application May 9, 1979, Ser. No. 37,918
Int. Cl.[3] A23L *1/212*
U.S. Cl. 426—512 **1 Claim**

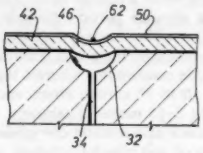


1. A method for obtaining folded stuffing pieces of pimento for the stuffing of pitted olives comprising moving a continuous strip of stuffing material longitudinally while folding it to have a U-shaped cross-section, laterally supporting one side only of the distal end portion of said folded strip, severing said end portion from said strip by a transverse cutting action applied only at the unsupported other side of said distal portion, and sweeping said severed end portion transversely away from said strip in the direction of the laterally supported side of the end portion thereof while removing the lateral support for said one side of said end portion.

4,248,904
METHOD FOR PREPARING SAMPLES FOR APPLICATION TO A THIN LAYER CHROMATOGRAPHIC SHEET

David C. Fenimore, 1300 Moursund, Houston, Tex. 77030

Continuation-in-part of Ser. No. 909,207, May 25, 1978, abandoned. This application May 21, 1979, Ser. No. 39,960
Int. Cl.[3] B05D *3/00*
U.S. Cl. 427—2 9 Claims

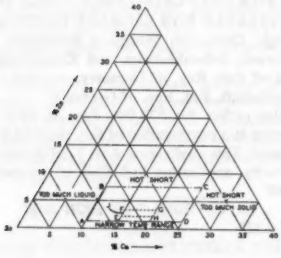


1. Method for applying samples to a thin-layer chromatographic sheet comprising the steps of:
providing a chemically inert, non-absorptive applicator plate;
introducing a solution of a sample and a solvent into a depressed portion of the applicator plate;
evaporating the solvent to provide a speck of sample on the transfer liquid; and
transferring the speck to a thin-layer chromatographic sheet.

4,248,905
TIN-BASE BODY SOLDER

Douglas J. Harvey, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 21, 1980, Ser. No. 113,559
Int. Cl.[3] C23C *1/04*
U.S. Cl. 427—11 4 Claims



1. A method of filling a depression in a fabricated steel surface comprising applying to said surface a workable thixotropic paste formed by heating a Sn-Cu-Zn alloy consisting essentially of about 10 to 25 weight percent Cu, about 1 to 7.5 weight percent Zn and the balance Sn.

4,248,906
PROCESS FOR PREPARING INSOLUBLE ELECTRODE

Shunjiro Saito; Saburo Ishibashi, and Nobuei Shimojo, all of Tokyo, Japan, assignors to TDK Electronics Company, Limited, Tokyo, Japan

Continuation of Ser. No. 896,385, Apr. 14, 1979, abandoned. This application Sep. 28, 1979, Ser. No. 79,938
Claims priority, application Japan, Jul. 19, 1977, 52-86193
Int. Cl.[3] B05D *5/12*
U.S. Cl. 427—125 9 Claims

1. A process for preparing an insoluble electrode for electrolysis which comprises:
coating a conductive substrate with a solution or slurry comprising preformed palladium oxide and a platinum compound which can be thermally decomposed to form platinum metal;
drying said coated substrate and baking said substrate at an elevated temperature sufficient to decompose said platinum compound to platinum metal, thereby
forming on said substrate a coat which comprises a mixture of platinum metal and palladium oxide.

4,248,907
PROCESS FOR PREPARING MAGNETIC POWDER

Tatsuo Uehori, Miyotamachi, and Ryouichi Horimoto, Komoro, both of Japan, assignors to TDK Electronics Company, Limited, Tokyo, Japan

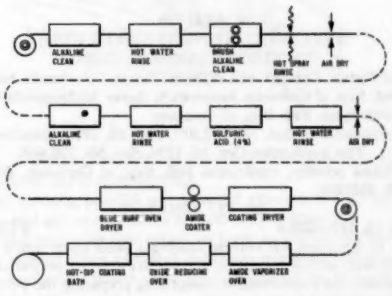
Filed Jul. 25, 1979, Ser. No. 60,733
Claims priority, application Japan, Aug. 1, 1978, 53-93869
Int. Cl.[3] B05D *5/12*
U.S. Cl. 427—127 7 Claims

1. A process for preparing a magnetic powder, which comprises:
dispersing finely powdered iron oxide or iron oxide hydrate optionally coated or doped with at least one element selected from the group consisting of cobalt, nickel, tin, titanium, bismuth, zinc and antimony or at least one compound of said element(s) into an aqueous solution containing a hydrophilic macromolecular compound in an amount sufficient to coat said finely powdered iron oxide or iron oxide hydrate;
separating said coated powdered material; and
reducing said powdered material in a reducing atmosphere.

4,248,908
HOT-DIP METALLIC COATINGS ON LOW CARBON ALLOY STEEL

Richard A. Nickola, Highland, Ind., assignor to Inland Steel Company, Chicago, Ill.

Filed Jul. 6, 1979, Ser. No. 55,330
Int. Cl.[3] C23C *1/08*
U.S. Cl. 427—156 9 Claims

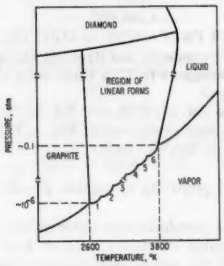


1. A process of hot-dip coating a strip of cold rolled low carbon alloy steel having as an essential alloying element at least one strong oxide forming metal which comprises; removing metallic particles and non-metallic contaminants from the surface of said strip and drying said surface, forming a uniform dry film coating of a higher fatty acid amide having a chain length of between 8 and 18 carbon atoms on the clean dry surface of said strip, heating said strip to a temperature of between about 204° C. (400° F.) and 644° C. (1200° F.) to completely volatilize the amide coating, passing said strip through a heating zone containing a reducing atmosphere in which the strip is heated to a temperature of at least about 704° C. (1300° F.), cooling said strip in a reducing atmosphere to about the temperature of a molten metal bath for hot-dip coating said strip, and passing said strip through said hot-dip coating bath.

4,248,909
CHAOITE COATING PROCESS

Arthur G. Whittaker, Woodland Hills, Calif., assignor to The Aerospace Corporation, El Segundo, Calif.

Filed Nov. 19, 1979, Ser. No. 95,851
Int. Cl.[3] G02B 1/10; C03C 17/22
U.S. Cl. 427—162 5 Claims



1. The process for forming a film on a substrate surface, said film consisting of one of the carbyne forms of carbon comprising the steps:

(a) heating carbon to a temperature in the range of 2800° K. to 3200° K., in a closed partially evacuated chamber whereby to produce gaseous carbon at a temperature within the said range, the temperature of said gaseous carbon declining upon expansion away from carbon being heated;

(b) subjecting the surface of the substrate to the gaseous carbon onto which the film is to be formed, said surface being oriented facewise toward the carbon being heated, and said surface being located at a distance from the carbon being heated whereat the gaseous carbon is reduced to a temperature in the approximate range of 26000°–2800° K. whereby the carbon gas is quenched on and by said surface to form the thin film consisting of carbyne.

4,248,910
REVERSE COATING TEXTILES WITH POLYURETHANE SOLUTIONS

Josef Pedain, Cologne, and Wilhelm Thoma, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 592,011, Jun. 30, 1975, abandoned. This application Oct. 26, 1976, Ser. No. 735,664
Claims priority, application Fed. Rep. of Germany, Jul. 2, 1974, 2431846
Int. Cl.[3] B05D 5/10
U.S. Cl. 427—208.4 8 Claims

1. In a process for reverse coating a sheet-form textile substrate with adhesive-coating and surface-coating polyurethane solutions, the improvement comprising preparing the polyurethane solutions using a single organic solvent which is polar and controlling the coating behavior of the adhesive-coating solution by varying its water content between about 1 and 15 weight % based on the weight of the solution.

4,248,911
CONCENTRATED HEAVY DUTY PARTICULATE LAUNDRY DETERGENT

Harold E. Wixon, New Brunswick, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

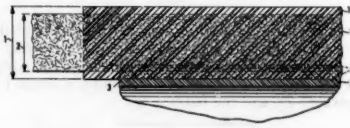
Filed Dec. 2, 1976, Ser. No. 746,900
Int. Cl.[3] C11D 3/075, 3/12, 11/00, 17/06
U.S. Cl. 427—214 8 Claims

1. A method of making a free-flowing, particulate heavy duty laundry detergent having a bulk density of at least about 0.6 gm/cc. and comprising substantially globular sodium tripolyphosphate particles, zeolite particles, and nonionic detergent; wherein said tripolyphosphate particles include 5–15% water and about 10–20% of sodium silicate having an Na_2O:-SiO_2 ratio in the range of about 1:1.6 to about 1:3.0; and wherein said zeolite is a crystalline, amorphous or mixed crystalline and amorphous zeolite wherein the exchange rate and capacity of said zeolite particles is such that when about 375 ppm of said zeolite on an anhydrous basis is placed in water at 45° C. containing 40 ppm of dissolved calcium ion while vigorously stirring the dissolved calcium ion content of the water is reduced to below about 8 ppm in about 5 minutes, said zeolite particles having ultimate particle diameters in the range of from about 0.01 to 20 microns; and wherein said nonionic detergent is selected from the group consisting of fatty alcohol polyethylene oxide condensates wherein the higher fatty alcohol is of about 10 to 18 carbon atoms and the polyethylene oxide is of about 3–15 moles of ethylene oxide per mole of higher fatty alcohol; said method comprising mixing together about 30 to 50% of said tripolyphosphate particles with from about 5–30% of said nonionic detergent, said nonionic detergent being in liquid form so that the detergent is absorbed by and coats the particles, and admixing with said nonionic detergent coated particles from about 30–50% of zeolite particles, which zeolite particles adhere to the detergent on the surfaces of the particles to make them free flowing and to provide a first formed particle; and applying a second coating of nonionic detergent to said first formed particle and then applying to said second nonionic detergent coating a coating of zeolite particles; wherein the ratio of said second nonionic detergent coating to zeolite post-applied to said first formed free-flowing particle is in the range of from about 1:1 to 1:.1 and wherein the total weight percentage of said second nonionic detergent coating and zeolite post-applied to said first formed free-flowing particle is no more than about one-half the weight percentage of said nonionic detergent and zeolite in said first formed particle.

4,248,912
PROCESS FOR PREPARING PACKAGING MATERIAL SUITABLE FOR SAUSAGE CASINGS

Günter Gerigk, Oberursel; Wolfgang Klendauer, Wiesbaden; Horst Pietruck, Schwabenheim, and Klaus-Dieter Hammer, Mainz, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 872,696, Jan. 26, 1978, Pat. No. 4,192,904, which is a continuation of Ser. No. 669,811, Mar. 24, 1976, abandoned. This application Apr. 3, 1979, Ser. No. 26,517
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1975, 2512995
Int. Cl.[3] B05D 7/22; B32B 1/08
U.S. Cl. 427—230 8 Claims



1. A process for the production of a regenerated cellulose tube containing a portion of water and chemical plasticizer wherein a liquid aqueous copolymer dispersion containing polyvinylidene chloride is continuously applied to the inside surface of a tube composed of regenerated cellulose, characterized in that a liquid coating is applied to the inside surface of the wall of a tube on the basis of cellulose hydrate that is in its gelled state, the coating being composed of an aqueous copolymer dispersion the dispersed portion of which consists of a copolymer obtained by copolymerization of a mixture of polymerizable monomers, this mixture consisting of 70 to 92 percent by weight of vinylidene chloride and of 8 to 30 percent by weight of acrylic acid and acrylic acid ester, or acrylic acid and methacrylic acid ester, or acrylic acid, acrylic acid ester

and methacrylic acid ester, or methacrylic acid and acrylic acid ester, or methacrylic acid and methacrylic acid ester, or methacrylic acid, acrylic acid ester and methacrylic acid ester, after which the tube is dried by heating in a single step heating action, and then wetted with water.

4,248,913

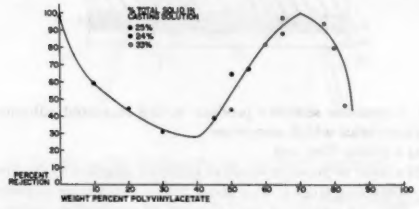
PROCESS FOR PREPARING A MEMBRANE

Stephen Z. Jakabhazy, Weston, and Leos J. Zeman, Winchester, all of Mass., assignors to Abcor, Inc., Wilmington, Mass.

Continuation-in-part of Ser. No. 966,868, Dec. 6, 1978, abandoned. This application May 24, 1979, Ser. No. 42,039

Int. Cl.³ B05D *5/00;* **B01D** *13/00*

U.S. Cl. 427—244 **22 Claims**



22. In a process for preparing a microporous polymeric membrane, which process comprises preparing a membrane-casting solution, casting a thin film of the casting solution on a support base, allowing partial evaporation of the solvent from the cast film for a predetermined period of time and contacting the partially evaporated cast film with a leaching liquid to provide the microporous membrane, the improvement which comprises:

(a) providing a casting solution which comprises an aprotic polar solvent and a diluent, a vinylidene fluoride polymer substantially regular and linear in structure with a high content of a crystalline phase, and from about 35 to 85 weight percent per total polymer of a vinyl acetate polymer having a molecular weight of over about 1,000,000 daltons; and

(b) hydrolyzing the vinyl acetate polymer in the leached membrane by contacting the membrane with a hydrolyzing acid to provide an improved membrane containing a vinylidene fluoride polymer and a vinyl alcohol polymer, the membrane having good mechanical strength and hydrophilic properties.

4,248,914

METHOD OF UTILIZING A FLEXIBLE PAINT SHIELD

Robert A. McClane, Anaheim, Calif., assignor to Impact Manufacturing Co., Inc., Santa Fe Springs, Calif.

Division of Ser. No. 796,925, May 16, 1977. This application Nov. 2, 1978, Ser. No. 957,034

The portion of the term of this patent subsequent to Aug. 1, 1992, has been disclaimed.

Int. Cl.² B05B *15/04;* **B05D** *1/02*

U.S. Cl. 427—282 **5 Claims**

1. A method for spray painting one surface and effieciently shielding an adjacent surface using a large flexible masking blade and gripping means on said blade comprising:

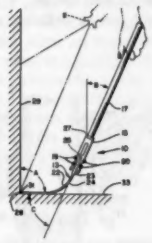
using a gripping means comprising an elongate handle;

placing the front edge of said blade along a corner edge formed between said surface to be painted and said adjacent surface;

pushing said gripping means to form a bend in said masking until said masking blade flexes to an angle of about 40° to 80° without permanent deformation of said blade;

spray painting said surface to be painted using a spray gun, said gun being held a convenient distance from said blade thereby causing a paint dispersion with overspray of paint, one end of said gripping means being of sufficient distance from the front edge of said blade length, that upon flexing of the blade, a user's hand holding said gripping means is not reached by said overspray; and

providing said masking blade to be of sufficient large height and width that even though said spray paint gun is held at



a convenient spraying distance from said blade, said adjacent surface is shielded from said overspray such that said blade does not allow said overspray to reach under said blade to damage said adjacent surface being shielded from said overspray.

4,248,915

PROCESS FOR APPLYING A THICK INSET OF ANTIFRICTION RESINS ON A SURFACE

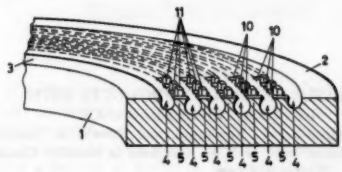
Costantino Vinciguerra, Florence, Italy, assignor to Nuovo Pignone S.p.A., Florence, Italy

Filed Jun. 27, 1979, Ser. No. 52,505

Claims priority, application Italy, Jul. 5, 1978, 25354 A/78

Int. Cl.³ B44D *1/092*

U.S. Cl. 427—292 **8 Claims**



1. A process for applying a layer of an anti-friction resin to a metallic surface comprising:

(a) forming parallel and adjacent grooves on said surface, said adjacent grooves separated by a ridge;

(b) jumping-up said ridges to form an alternating series of pushed down sections in which an overhang is formed and sections in which the original height of the ridge is maintained;

(c) placing a layer of the anti-friction resin on said surface; and

(d) sintering said layered surface.

4,248,916

ARTIFICIAL CHRISTMAS TREE

Ascher Chase, Virginia Beach, Va., assignor to General Foam Plastics Corp., Norfolk, Va.

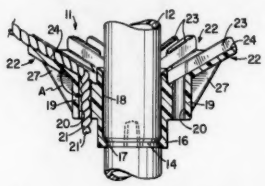
Filed May 24, 1979, Ser. No. 42,099

Int. Cl.³ A47G *33/06*

U.S. Cl. 428—8 **14 Claims**

1. In an artificial tree assembly having a vertical trunk pole mounting groups of twisted wire branches having their inner end portions permanently bent at a predetermined angle, the improvement comprising;

(a) a plurality of unitary branch holders mounted in predetermined mutual spaced relation along said trunk;
(b) each holder having a central tubular sleeve having an inner diameter substantially equal to the outer diameter of said trunk pole;
(c) a plurality of bosses arranged equidistantly about the outer surfaces of said sleeve;
(d) each of said bosses defining an elongated axial bore therein; and



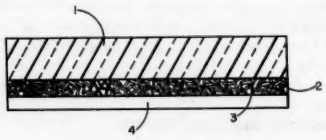
(e) integral, cantilivered channel means extending outwardly and upwardly from each boss at a predetermined angle substantively equal to said predetermined inner branch end angle;
(f) whereby the angularly related walls of each axial bore and associated channel means of each holder are adapted to receive, to engage, and to maintain the angularly related surfaces of the bent ends of groups of said twisted wire branches at predetermined levels along said trunk pole while accommodating selective rotation of said groups of branches about said pole for tree shaping.

4,248,917

PRESSURE SENSITIVE PRODUCTS WITH DECORATIVE APPEARANCE

Walter J. Hornibrook, Newburgh, and Ronald A. Lombardi, New Windsor, both of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Jul. 18, 1977, Ser. No. 816,236
The portion of the term of this patent subsequent to Feb. 3, 1998, has been disclaimed.
Int. Cl.[3] B32B *7/06, 27/20*
U.S. Cl. 428—40 **9 Claims**



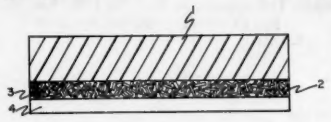
1. A pressure sensitive product having a decorative appearance which comprises:
(a) a substantially transparent plastic film; and
(b) a layer of pressure sensitive adhesive containing non-leafing metallic flakes attached to the film, said flakes providing opacity to the adhesive layer and increased adhesion of the pressure sensitive product to a substrate, a predominant amount of said flakes having a particle size range of from 200 to 60 mesh and being present in an amount of from at least about 5% to a maximum of about 20%, by weight of the adhesive.

4,248,918

PRESSURE SENSITIVE PRODUCTS AND ADHESIVE FORMULATIONS

Walter J. Hornibrook, Newburgh, and Ronald A. Lombardi, New Windsor, both of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 816,236, Jul. 18, 1977. This application Jun. 7, 1978, Ser. No. 913,279
The portion of the term of this patent subsequent to Feb. 3, 1998, has been disclaimed.
Int. Cl.[3] B32B *7/06, 27/20*
U.S. Cl. 428—40 **10 Claims**



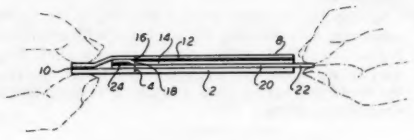
1. A pressure sensitive product having increased adhesion characteristics which comprises:
(a) a plastic film; and
(b) a layer of pressure sensitive adhesive attached to the film containing from at least about 5% to a maximum of about 20%, by weight of the adhesive, of non-leafing metallic flakes having a predominant particle size of from 200 to 60 mesh.

4,248,919

BUSINESS FORM

Ronald A. Davis, Blue Island, Ill., assignor to Litton Business Systems, Inc., Belleville, N.J.

Filed Apr. 26, 1979, Ser. No. 33,535
Int. Cl.[2] B32B *7/10;* **B41L** *1/04;* **G09F** *19/00*
U.S. Cl. 428—40 **13 Claims**

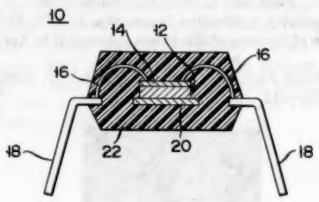


1. A business form comprising an assemblage of superposed sheets including:
a first sheet;
a second sheet overlying said first sheet;
said second sheet being provided with pressure sensitive adhesive means for securing said second sheet to said first sheet;
a liner sheet for and releasably secured to said adhesive means;
a third sheet interposed between said liner sheet and said first sheet and adapted to be removed from said assemblage;
said third sheet and said liner sheet being secured together at a given area and unsecured together at another area, so that said third sheet can be grasped independently of said liner sheet and removed from said assemblage, such removal of said third sheet from said assemblage causing consequent removal therewith of said liner and sheet secured thereto; and wherein during said removal of the third sheet and said consequent removal of the liner sheet therewith, said liner sheet is stripped from said adhesive means and in the course of said stripping causes said second sheet to be laid down on said first sheet.

4,248,920
RESIN-SEALED SEMICONDUCTOR DEVICE

Akira Yoshizumi, Yokohama; Hirotoshi Ikeya, Yokosuka, and Moriyasu Wada, Kanagawa, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 17, 1979, Ser. No. 30,768
Claims priority, application Japan, Apr. 26, 1978, 53-48776; Jun. 28, 1978, 53-77459
Int. Cl.[3] B32B *27/38, 1/04*
U.S. Cl. 428—76 17 Claims

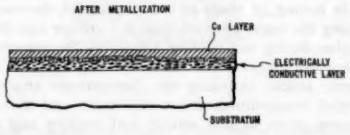


1. A resin-sealed semiconductor device comprising:
a body of a semiconductor device; and
a solid package formed of an epoxy resin composition sealing the body of the semiconductor device, said epoxy resin composition comprising:
(a) 65 to 75% by weight of an inorganic powder filler having a low concentration of impurities such that it provides an aqueous solution exhibiting an electric conductivity of 10 $\mu\nu$/cm or less when extracted in pure boiling water, said inorganic powder filler comprising a fused silica powder composed of 70 to 90% by weight of first particles less than 44μ, 5 to 25% by weight of second particles 44μ to less than 74μ, 2 to 16% by weight of third particles 74μ to less than 149μ, and 3% by weight or less of fourth particles 149μ or more, at least 20% by weight of the total amount of said first particles consisting of fifth particles less than 8μ;
(b) 10 to 25% by weight of epoxy resin having an epoxy equivalent of 250 or less and a softening point of 120° C. or less;
(c) 5 to 25% by weight of a hardening agent selected from the group consisting of phenolic resins, organic acid anhydrides and mixtures thereof;
(d) 0.1 to 1.0% by weight of a hardening promoter; and
(e) 0.05 to 1.50% by weight of low melting paraffins.

4,248,921
METHOD FOR THE PRODUCTION OF ELECTRICALLY CONDUCTIVE AND SOLDERABLE STRUCTURES AND RESULTING ARTICLES

Wolf-Erhard Steigerwald, Rua de Fez, 731, 4000 Porto, Portugal; Peter Ambros, Jahnstrasse 6, 8741 Hohenroth, and Erich Gatzke, Sonnenlandstrasse 8, 8740 Bad Neustadt, Saale, both of Fed. Rep. of Germany

Filed Jun. 23, 1978, Ser. No. 918,378
Claims priority, application Fed. Rep. of Germany, Jun. 24, 1977, 2728465
Int. Cl.[3] B05D *5/12;* B32B *5/16*
U.S. Cl. 428—148 22 Claims



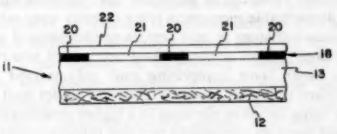
1. Method for the production of electrically conductive and solderable structures located in selected surface patterns on a non-conductive substrate, comprising the steps of applying at least one side of said non-conductive substrate a paste, comprising an organic polymer binder admixed with metal particles for providing electrical conductivity to the structure, metal salt particles, and a wetting agent in an amount which is effective for floating the metal salt particles to the surface of the structure, heating said paste and concentrating the metal salt particles at the exposed surface of the binder before it is cured, forming cavern-like pores on the surfaces of the cured binder by dissolving the metal salt particles thereon in a metallizing bath to obtain the cavern-like pores, and depositing a metal layer by galvanic or autocatalytic separation onto the porous surface to firmly connect the deposited layer with the underlying conductive structure.

22. A printed circuit board structure made in accordance with claim 1.

4,248,922
RESINOUS POLYMER SHEET MATERIALS HAVING SELECTIVE, SURFACE DECORATIVE EFFECTS AND METHODS OF MAKING THE SAME

Harry A. Shortway, Franklin Lakes; Alan A. Graham, Mercerville, and Charles H. Miller, Lawrenceville, all of N.J., assignors to Congoleum Corporation, Kearny, N.J.

Division of Ser. No. 5,266, Jan. 22, 1979, Pat. No. 4,187,131, which is a continuation-in-part of Ser. No. 942,246, Sep. 14, 1978, abandoned, which is a continuation-in-part of Ser. No. 879,171, Feb. 21, 1978, abandoned. This application Jul. 30, 1979, Ser. No. 62,432
Int. Cl.[3] B32B *5/20, 31/22, 31/26*
U.S. Cl. 428—159 30 Claims



1. A method of making a resinous polymer decorative sheet material having selectively positioned surface decorative effects comprising:
laying down or forming a base layer or substrate;
printing a pattern or design on said base layer or substrate, certain predetermined areas of said printed pattern or design containing a polymerization initiator and other predetermined areas of said printed pattern or design not containing any polymerization initiator;
applying to said printed pattern or design a surface layer of a resinous wear layer containing substantially uniformly therein a reactive polymerizable monomer;
and exposing said base layer or substrate and said surface resinous wear layer to a sufficiently elevated temperature as to cause said polymerization initiator to bring about polymerization and/or cross-linking of said reactive polymerizable monomer in those portions of said surface resinous wear layer lying directly over said polymerization initiator in said certain predetermined areas of said printed pattern or design and to achieve a relatively higher melt viscosity therein and to cause said polymerized and/or cross-linked portions of said surface resinous wear layer having a relatively higher melt viscosity to become raised or elevated to a higher level in the form of raised or elevated protuberances to create an unusual and distinct embossed surface effect by contrast with those portions of said surface resinous wear layer not lying directly over said polymerization initiator wherein a relatively higher melt viscosity is not achieved and which do not become raised or elevated to a higher level.

13. A resinous polymer decorative sheet material comprising:
a base layer or substrate;

a printing ink composition printed on said base layer or substrate in a pattern or design wherein certain predetermined areas contain a polymerization initiator and other predetermined areas do not contain a polymerization initiator; and

a surface resinous wear layer positioned on and adhered to said printed pattern or design and containing substantially uniformly therein a reactive polymerizable monomer, those portions of said surface resinous wear layer lying directly over said polymerization initiator being capable of polymerization and/or cross-linking of said reactive polymerizable monomers to achieve a relatively higher melt viscosity upon the application of sufficiently elevated temperatures and capable of being raised or elevated to a higher level, whereas those portions of said surface resinous wear layer not lying directly over said polymerization initiator are not capable of polymerization and/or cross-linking of said reactive polymerizable monomers and thus unable to achieve a relatively higher melt viscosity upon the application of said elevated temperatures or to be raised or elevated to a higher level, whereby an unusual and distinct embossed surface effect is created by the contrast of the portions that are raised and elevated with the portions that are not raised or elevated.

21. A resinous polymer decorative sheet material comprising:

a base layer or substrate;

a printing ink composition printed on said base layer or substrate in a pattern or design wherein certain predetermined areas contain a polymerization initiator and other predetermined areas do not contain a polymerization initiator; and

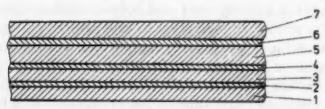
a resinous surface wear layer positioned on and adhered to said printed pattern or design and containing (1) portions comprising reactive polymerizable monomers substantially in unpolymerized form and (2) portions comprising polymerized and/or cross-linked polymers derived from said reactive polymerizable monomers lying directly over said polymerization initiators in said certain predetermined areas of said printed pattern or design, said portions of said resinous surface wear layer comprising said polymerized and/or cross-linked polymers having a relatively higher melt viscosity and being raised or elevated to a higher protuberant level than said portions comprising reactive polymerizable monomers substantially in unpolymerized form and not having a relatively higher melt viscosity and not being raised or elevated to a higher protuberant level, said raised or elevated protuberances creating an unusual and distinct embossed surface effect.

4,248,923

MULTILAYER BONDED FABRIC AND METHOD OF AND APPARATUS FOR MAKING SAME

Pia Ciobanu; Ioan Pop, and Grigore Virlan, all of Bucharest, Romania, assignors to Institutul de Cercetari Textile, Bucharest, Romania

Filed Dec. 12, 1978, Ser. No. 968,861
Claims priority, application Romania, Dec. 19, 1977, 92520
Int. Cl.[3] B32B *3/00*
U.S. Cl. 428—197 **11 Claims**



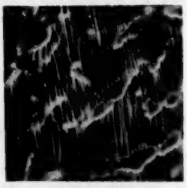
1. A multilayer bonded textile composite comprising a first polyamide knit layer, a first binder layer bonded to said first polyamide knit layer, a needled nonwoven polyester layer bonded to said first polyamide knit layer by said first binder layer, a second binder layer bonded to said nonwoven needled polyester layer, a second polyamide knit layer identical to said first polyamide knit layer and bonded by said second binder layer to said nonwoven needled polyester layer, a third binder layer bonded to said second polyamide knit layer, and a lace layer bonded to said second polyamide knit layer by said third binder layer.

4,248,924

ASYMMETRIC POROUS FILM MATERIALS AND PROCESS FOR PRODUCING SAME

Koichi Okita, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Sep. 2, 1977, Ser. No. 830,288
Claims priority, application Japan, Sep. 3, 1976, 51-105912
The portion of the term of this patent subsequent to Apr. 4, 1995, has been disclaimed.
Int. Cl.[3] B32B *27/02;* **B01D** *13/04;* **D01D** *5/12;* **B29D** *27/00*
U.S. Cl. 428—212 **5 Claims**



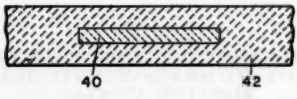
1. An asymmetric porous film material of polytetrafluoroethylene wherein said polytetrafluoroethylene has a fiber structure comprising nodules linked to one another by filaments and wherein the fiber structure is such that the average filament length in one surface of said porous film material is different from the average filament length in the opposite surface of said porous film material.

4,248,925

ENCAPSULATION IN GLASS AND GLASS-CERAMIC MATERIALS

Raymond R. Ambrogi, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Jun. 25, 1979, Ser. No. 51,712
Int. Cl.[3] C03B *19/00*
U.S. Cl. 428—212 **11 Claims**



1. A method of forming a composite glass-ceramic cooking vessel having a heat conducting insert fully encapsulated therewithin which comprises, supplying molten glass having a first coefficient of thermal expansion, supplying a heat conducting insert which does not chemically or fusion bond to the molten glass and which has a second coefficient of thermal expansion which is less than 20×10^{-7}/°C. greater than the first coefficient of thermal expansion of the molten glass, fully encapsulating said insert within said molten glass, cooling said molten glass and the encapsulated insert to form a composite glass article having an insert fully encapsulated therewithin, contracting the insert upon cooling at a greater rate than that of the glass during said cooling, subjecting the composite article to elevated temperatures and converting the glass to a glass-ceramic article, shrinking the glass-ceramic article while at elevated temperatures about said insert and simultaneously inducing stress in said article, and cooling said composite glass-ceramic article to room temperature while simultaneously contracting said insert at a greater rate than that of said glass-ceramic article and thereby relieving the stress induced in

said article to form a glass-ceramic cooking vessel having a heat conducting insert fully encapsulated therewithin.

10. An integral glass-ceramic article for supporting material to be heated having an insert fully encapsulated therewithin which comprises, an integral body portion of glass-ceramic material having a first coefficient of thermal expansion and a first modulus of elasticity, a heat-conductive graphite insert fully embedded within said glass-ceramic article having a second coefficient of thermal expansion greater than said first coefficient of thermal expansion and a second modulus of elasticity less than said first modulus of elasticity, said coefficient of thermal expansion of said graphite insert being selected so that said graphite insert is in intimate contact with said glass-ceramic body at room temperature without exerting undesirable stresses therebetween, and said graphite insert providing improved heat transfer within said glass-ceramic article upon application of heat to said article.

4,248,926

FLASHING SHEET

Eiichi Tajima; Kaname Yamamoto, both of Tokyo, and Takeshi Saito, Hoya, all of Japan, assignors to Tajima Roofing Co., Ltd., Tokyo, Japan

Filed Jun. 6, 1979, Ser. No. 46,000
Claims priority, application Japan, Jul. 26, 1977, 52-88812
Int. Cl.³ B32B 7/00
U.S. Cl. 428—253 **14 Claims**

1. A multi-layer, laminated, flashing sheet, comprising: a base layer made of knitted fabric and consisting essentially of synthetic resin fibers, said knitted-fabric base layer having a high stretchability in all directions;

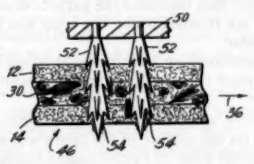
at least one modified bitumen layer laminated on one surface of said base layer in direct, face-to-face, mutually adhering contact therewith, said modified bitumen layer consisting essentially of a mixture of waterproofing roofing bitumen and rubber, said modified bitumen layer being substantially waterproof and having a high flexibility and stretchability at ambient temperature and below, whereby the flashing sheet is easily stretchable in all directions and is deformable to easily conform to the shapes of non-flat parts of the roof and walls of a building.

4,248,927

INSULATING COMPOSITION

Bernard S. Liebman, 7 Talman Pl., Dix Hills, N.Y. 11746

Filed Jul. 30, 1979, Ser. No. 61,920
Int. Cl.³ B32B 5/06
U.S. Cl. 428—284 **1 Claim**



1. An homogenous insulating composition comprising a plurality of layers of at least one vertically integrated web, each layer of said web comprising waterfowl plumage securely entangled within at least one opened combed layer of polyester batting.

4,248,928

LAUNDRY ADDITIVE PRODUCT

Gianfranco L. Spadini, and Ian D. Tolliday, both of Newcastle upon Tyne, England, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 839,490, Oct. 4, 1977, Pat. No. 4,179,390. This application Jun. 4, 1979, Ser. No. 45,575
Claims priority, application United Kingdom, Oct. 6, 1976, 41491/76; May 13, 1977, 20213/77
The portion of the term of this patent subsequent to Dec. 18, 1996, has been disclaimed.
Int. Cl.³ B32B 27/06
U.S. Cl. 428—286 **4 Claims**

1. A product, adapted to remove stains from textiles in an aqueous inorganic peroxy bleach containing wash liquor, consisting essentially of

(a) a flexible sheet substrate in water-releasable combination with

(b) an organic peroxy bleach precursor capable of reacting in aqueous washing liquor with inorganic peroxy bleach selected from the group consisting of alkali meal perborate, percarbonate, persilicate and perpyrophosphate bleaches to form an organic peroxy bleach having a bleaching performance at least equivalent to that of the inorganic peroxy bleach, said precursor having a melting point ranging from about 95° C. to about 250° C. and being selected from the group consisting of tetra acetyl alkylene diamines in which the alkylene group has 2–4 carbon atoms, tetra acetyl glycouril and mixtures thereof;

(c) a solid release aid in combination with said precursor functioning to provide a composition on the substrate with a melting point ranging from about 40° C. to about 80° C., said release aid comprising composition selected from the group consisting of water soluble and water dispersible C_{12}–C_{18} fatty carboxylic acids, polyethylene glycols of molecular weight greater than 4000 and mixtures of the foregoing;

the weight ratio of the precursor to the substrate lying in the range from about 10:1 to about 1:10; the weight of the ratio of the precursor to the release aid lying in the range from about 20:1 to about 1:10; the maximum weight ratio of release aid to substrate being 10:1.

4,248,929

FILTER MEDIA COATED WITH FLAME RESISTANT COMPOSITIONS

Albert W. Morgan, Collinsville, Ill., and Roland G. Ribaudo, Affton, Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 901,531, May 1, 1978, Pat. No. 4,196,005. This application Oct. 24, 1979, Ser. No. 87,919
Int. Cl.³ D04H 1/64; B01D 39/14
U.S. Cl. 428—288 **12 Claims**

1. An article of manufacture suitable for filtering solids or liquids from a gas and comprising solid filter media at least partially coated with a sprayable, flame resistant gel composition consisting essentially of from about 50 to about 99% normally liquid essentially halogen-free aromatic ester selected from the group consisting of phosphate and polycarboxylate and mixtures thereof and, substantially uniformly dispersed throughout said ester, from about 1 to about 50% finely divided inorganic phosphate, wherein said inorganic phosphate is essentially ammonium phosphate and has an average particle size from about 0.5 to about 40 microns, said aromatic phosphate is selected from di(C_4–C_{20} alkyl)aryl, C_4–C_{20} alkyl diaryl and triaryl phosphates in which each aryl radical is unsubstituted phenyl or C_1–C_{12} alkylphenyl, and said polycarboxylate is selected from di(C_1–C_{20} alkyl), C_1–C_{20} alkyl benzyl and dibenzyl phthalates.

4,248,930
THE PRODUCTION OF POLYURETHANE RESINS AND LAMINATES

Peter Haas, Haan; Johannes Blahak, Cologne; Werner Mormann, Leverkusen, and Manfred Kapps, Bergisch-Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen Bayerwerk, Fed. Rep. of Germany

Continuation of Ser. No. 920,563, Jun. 29, 1978, abandoned.
This application Dec. 26, 1979, Ser. No. 107,310
Claims priority, application Fed. Rep. of Germany, Jul. 16, 1977, P2732292
Int. Cl.[3] C08G *18/14, 18/18;* **B32B** *27/40;* **C08K** *5/20*
U.S. Cl. 428—315 **10 Claims**

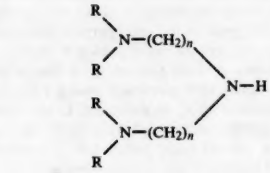
1. A process for the production of cellular or non-cellular polyurethane resins comprising reacting:

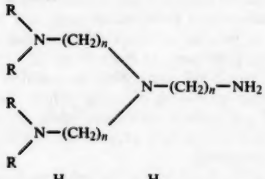
(a) polyisocyanates; with

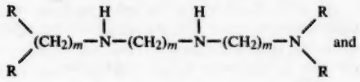
(b) compounds having at least 2 isocyanate reactive hydrogen atoms; in the presence of

(c) tertiary amines as catalysts; optionally with the addition of

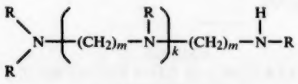
(d) blowing agents, stabilizers and other known additives; wherein the substances used as component (c) comprise compounds selected from the group consisting of


(1)


(2)


(3)

and


(4)

and mixtures thereof in which formulae:

the symbols R may be the same or different and represent straight or branched-chain alkyl groups having from 1 to 4 carbon atoms,

the symbols n may be the same or different and represent 2 or 3;

the symbols m may be the same or different and represent 2 or 3; and

k represents an integer of from 1 to 5.

10. A laminate comprising a synthetic resin foil covering a polyurethane resin produced by the process of claim **1**.

4,248,931
DIMENSIONALLY STABLE STRUCTURAL FOAM PLASTIC PRODUCT

Syed Salman, Sterling Heights, Mich., assignor to International Telephone & Telegraph Corporation, New York, N.Y.

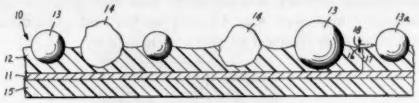
Filed Apr. 25, 1980, Ser. No. 143,748
Int. Cl.[3] B32B *5/18*
U.S. Cl. 428—315 **9 Claims**

1. A thermally and dimensionally stable structural foam plastic product having a cellular core and an integral solid skin on the surface thereof comprising a thermoplastic resin and from 1 to 30% of finely divided mica by volume, said percentage based upon the volume of resin.

4,248,932
EXTENDED-LIFE PAVEMENT-MARKING SHEET MATERIAL

Chi F. Tung, Mahtomedi, and George W. Frost, Jr., Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Jun. 14, 1979, Ser. No. 48,644
Int. Cl.[3] B32B *5/16;* **E01F** *9/00*
U.S. Cl. 428—325 **21 Claims**



1. Pavement-marking sheet material comprising

(a) a base sheet that is conformable to a roadway surface;

(b) a top layer adhered to one surface of the base sheet and reacted to a substantially infusible, insoluble, and flexible state in which the top layer conforms and remains adhered to the base sheet without rupture even when the sheet material is wrapped around a one-millimeter-diameter mandrel; the top layer containing coloring agents sufficient to color the sheet material for utility as a traffic-control marking; and

(c) a monolayer of particles partially embedded in the top layer and partially exposed above the top layer;

the top layer encircling the particles such that at points one radius removed from the periphery of an average-diameter particle, the top layer has a thickness of at least one-third the particle diameter and has receded below its level on the particle by no more than one-third the particle diameter, whereby the particles are retained in the top layer and protect the top layer from wear.

9. Pavement-marking sheet material comprising

(a) a base sheet that conforms under pressure to a roadway;

(b) a top layer adhered to one surface of the base sheet and comprising an epoxy resin having on the average more than one reactive epoxy group per molecule, a flexibilizing polymer which provides at least 5 weight-parts of elastomeric segments in the top layer per 100 weight-parts of epoxy resin segments, and coloring agents sufficient to color the top layer for utility as a traffic-control marking; the top layer conforming and adhering to the base sheet without rupture even when the sheet material is wrapped around a one-millimeter-diameter mandrel; and

(c) a monolayer of particles partially embedded in the top layer and partially exposed above the top layer;

the top layer encircling the particles such that at points one radius removed from the periphery of an average-diameter particle, the top layer has a thickness of at least one-third the particle diameter and has receded below its level on the particle by no more than one-third the particle diameter, whereby the particles are retained in the top layer and protect the top layer from wear.

16. Pavement-marking sheet material comprising

(a) a base sheet that conforms under pressure to a roadway surface;

(b) a top layer between about 25 and 250 micrometers thick adhered on one surface of the base sheet and comprising

(i) diglycidyl ether of hydrogenated bisphenol A;

(ii) flexibilizing polymer which provides at least 5 parts of elastomeric segments per 100 parts of epoxy resin segments in the top layer, and which carries reactive groups through which the flexibilizing polymer is reacted with the diglycidyl ether of bisphenol A; and

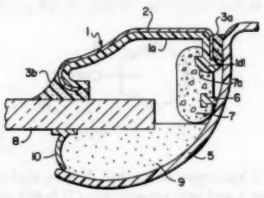
(iii) coloring agents sufficient to color the sheet material for utility as a traffic-control marking;
the top layer conforming and adhering to the base sheet without rupture even when the sheet material is wrapped around a one-millimeter-diameter mandrel; and
(c) a monolayer of inorganic particles partially embedded in the top layer and partially exposed above the top layer, said particles being contacted by an adhesion-promoting agent having an inorganophilic portion and an organophilic portion; the top layer being filleted around the particles in a flat fillet such that at points one radius removed from the periphery of an average-diameter particle; the top layer has a thickness of at least one-third the particle diameter and has receded below its level on the particle by no more than one-third the particle diameter, whereby the particles are retained in the top layer and protect the top layer from wear.

4,248,933

SYNTHETIC RESIN WINDOW MOLDING

Hisanori Katoh, Tokyo, Japan, assignor to Inoue Gomu Kogyo Kabushiki Kaisha, Aichi, Japan

Continuation-in-part of Ser. No. 839,752, Oct. 5, 1977, Pat. No. 4,163,076. This application Jan. 8, 1979, Ser. No. 1,788
Claims priority, application Japan, Apr. 5, 1977, 52/42175
The portion of the term of this patent subsequent to Jul. 31, 1996, has been disclaimed.
Int. Cl.³ B32B *15/08*
U.S. Cl. 428—339 **49 Claims**



1. A window molding for a vehicle comprising:
(a) a synthetic resin body member, said body member having a center portion, a first end portion at one end of said center portion and a second end portion at the other end of said center portion;
(b) a metal foil bonded to said body member, said metal foil having first, second and third portions, said first portion of said foil covering at least a part of said first end portion of said body member, said second portion of said foil covering at least a part of said second end portion of said body member, and said third portion of said foil covering said center portion of said body member; and
(c) soft plastic protective layer means, bonded to at least a part of said first and second portions of said metal foil, said protective layer means bonded to said first portion of said metal foil being adapted for forming a protective layer between said metal foil and the body of the vehicle at said first end portion of said body member and said protective layer means bonded to said second portion of said metal foil being adapted for forming a protective layer between said metal foil and the window of a vehicle at said second end portion of said body member.

24. A window molding for a vehicle comprising:
(a) a synthetic resin body member, said body member having a center portion, a first end portion at one end of said center portion and a second end portion at the other end of said center portion;
(b) a metal foil bonded to said body member, said metal foil having first, second and third portions, said first portion of said foil covering at least a part of said first end portion of said body member, said second portion of said foil covering at least a part of said second end portion of said body member, and said third portion of said foil covering said center portion of said body member; and
(c) soft plastic protective layer means, bonded to at least a part of said second portion of said metal foil, said protective layer means bonded to said second portion of said metal foil being adapted for forming a protective layer between said metal foil and the window of a vehicle at said second end portion of said body member.

4,248,934

FIBRE AND FILAMENT MIXTURES CONTAINING HIGH-SHRINKAGE BIFILAR POLY(MOD)ACRYLIC FILAMENTS OR FIBRES MODIFIED WITH CARBON BLACK

Martin Wandel; Helmut Engelhard; Ernst Gutschik; Manfred Reichardt, and Geert Christoph, all of Dormagen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 5, 1978, Ser. No. 922,120
Claims priority, application Fed. Rep. of Germany, Jul. 7, 1977, 2730643
Int. Cl.³ D02G *3/04*
U.S. Cl. 428—374 **5 Claims**

1. A fibre or filament mixture consisting of 0.1 to 20% by weight of high shrinkage side-by-side bifilar(mod)acrylic fibres or filaments separately containing TiO_2 and carbon black, and 99.9 to 80% by weight of normal fibres or filaments selected from the group of polyamide, polyester, polyalkene, poly(-mod)acrylic, wool, cotton and mixtures thereof.

4,248,935

STORAGE STABLE POLYOLEFIN COMPATIBLE NON-CROSSLINKING SIZE FOR FIBER GLASS STRANDS

Chester S. Temple, McKees Rocks, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Aug. 21, 1978, Ser. No. 932,275
Int. Cl.³ B32B *27/00*; D02G *3/00*
U.S. Cl. 428—391 **17 Claims**

1. A storage stable glass fiber strand comprising a strand of glass impregnated with a storage stable sizing consisting essentially of a coupling agent, surfactant, softener, cis-butenedioic acid stabilizer, a modified polypropylene lubricant, and a non-crosslinkable vinyl acetate homopolymer film forming polymer.

9. An article comprising a polyolefin polymer reinforced with glass strands wherein said glass strands are impregnated with a storage stable sizing consisting essentially of a coupling agent, surfactant, softener, cis-butenedioic acid, stabilizer, modified polypropylene lubricant and a non-crosslinkable vinyl acetate homopolymer film forming polymer.

4,248,936

ASPHALT-COATED GLASS FIBERS

Alfred Marzocchi; Michael C. Roberts, and Charles E. Bolen, all of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation-in-part of Ser. No. 970,774, Dec. 18, 1978, abandoned, which is a continuation of Ser. No. 852,778, Nov. 18, 1977, abandoned. This application May 29, 1979, Ser. No. 43,065
Int. Cl.³ B32B *9/04, 11/00*; D02G *3/00*
U.S. Cl. 428—391 **18 Claims**

1. Glass fibers having a coating thereon, said coating comprising the reaction product of bitumen and an organo silicon

compound containing at least one organic group bonded to the silicon atom, with the organic group being substituted with a

functional group reactive with the bitumen, and at least one readily hydrolyzable group.

4,248,937

METHOD OF BONDING UTILIZING BROMINATED RUBBER COMPOSITIONS AS ADHESIVES

Charles E. Williams, Bloomfield Hills, Mich., assignor to Grow Group, Inc., New York, N.Y.

Division of Ser. No. 766,024, Feb. 7, 1977, Pat. No. 4,153,642. This application Aug. 14, 1978, Ser. No. 933,144

Int. Cl.[3] **C09J** *5/00;* **B32B** *27/38*

U.S. Cl. 428—414 **5 Claims**

1. A method of adhering two substrates to each other comprising;

applying a one package rubber composition consisting essentially of a mixture of dibromopolybutadiene and an effective catalytic amount of the reaction product of a saturated aliphatic polyamine and a saturated aliphatic carboxylic acid or anhydride or an aromatic or cycloaliphatic acid or anhydride wherein the reaction product is a polyamide that is solid at ambient temperature and pressure to a first substrate at room temperature;

affixing the second substrate to the first substrate; and

curing said composition by heating said substrates to a temperature of at least 65° C.

4,248,938

PROCESS FOR PREPARING POLYESTER FIBER COMPOSITE MATERIALS USEFUL FOR REINFORCING RUBBER ARTICLES

Tadahiko Takata, Ibaraki; Masaya Kamiyoshi, Ashiya, and Satoshi Tanaka, Ibaraki, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Nov. 8, 1978, Ser. No. 958,739

Claims priority, application Japan, Nov. 15, 1977, 52-136233; Dec. 12, 1977, 52-148120

Int. Cl.[3] **C09J** *5/00;* **D02G** *3/48*

U.S. Cl. 428—414 **39 Claims**

38. A polyester fiber composite material useful for reinforcing rubber articles, comprising

a polyester fiber material;

a first impregnating composition layer with which said polyester fiber material is impregnated, consisting essentially of (A) at least one polyepoxide compound, (B) at least one blocked polyisocyanate compound and (C) at least one rubber latex selected from the group consisting of natural rubber, styrene-butadiene copolymer, vinyl pyridine-styrene-butadiene terpolymer and nitrile rubber latexes, and which has been heat-treated at a temperature lower than the melting point of said polyester fiber material, the ratio in dry weight of said polyepoxide compound to the sum of said polyepoxide compound and said blocked polyisocyanate compound being in a range of from 0.05 to 0.9 and the ratio in dry weight of said rubber latex to the sum of said polyepoxide compound and said blocked polyisocyanate compound being in a range of from 0.5 to 15, and;

a second impregnating composition layer which is formed on said first impregnating composition layer, which contains (D) a reaction product of resorcin with formaldehyde and (E) at least one rubber latex selected from the group consisting of natural rubber, styrene-butadiene copolymer, vinyl pyridine-styrene-butadiene terpolymer and nitrile rubber latexes and which has been heat-treated at a temperature lower than the melting point of said polyester fiber material.

4,248,939

PROCESS FOR DOUBLE COATING PAPER AND PRODUCT THEREOF

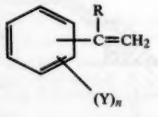
Charles L. Parsons, Port Orchard, Wash., assignor to Hercules Incorporated, Wilmington, Del.

Continuation of Ser. No. 962,430, Nov. 20, 1978, abandoned. This application Oct. 12, 1979, Ser. No. 84,285

Int. Cl.[3] **B05D** *1/36;* **B32B** *29/04, 19/02, 27/04*

U.S. Cl. 428—508 **26 Claims**

14. A coated paper comprising a paper substrate having adhered to at least one surface thereof a first coating composition comprised of an inorganic pigment and a binder and having adhered to said first coating composition a second coating composition comprised of a binder and an organic pigment, said organic pigment being water-insoluble graft copolymer particles consisting essentially of the free radical catalyzed graft copolymerization product of (1) at least one ethylenically unsaturated monomer and (2) a water-soluble prepolymer, the prepolymer moiety of the graft copolymer particles being present on the surface of the particles, said monomer (1) being selected from the group consisting of methyl alpha-chloroacrylate, ethyl alpha-chloroacrylate, methyl methacrylate, isopropyl methacrylate, phenyl methacrylate, vinyl chloride, acrylonitrile, methacrylonitrile, and monomers having the formula



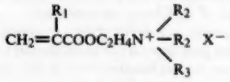
wherein R is hydrogen or methyl, Y is methyl or chlorine, and n is 0, 1, 2, or 3 and said prepolymer (2) being selected from the group consisting of:

a. anionic prepolymers prepared by the addition polymerization of a vinyl monomer or mixtures of vinyl monomers;

b. nonionic prepolymers prepared by the addition polymerization of a vinyl monomer or mixtures of vinyl monomers and;

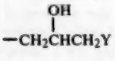
c. cationic prepolymers prepared by the addition polymerization of

(i) about 5 mole percent to about 95 mole percent of at least one cationic monomer selected from the group consisting of

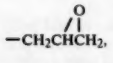


(I)

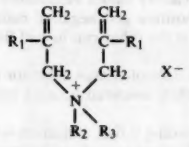
wherein R_1 is hydrogen or methyl, R_2 is hydrogen or a C_1–C_4 alkyl, R_3 is hydrogen, a C_1–C_4 alkyl,



where Y is hydroxyl or halogen,

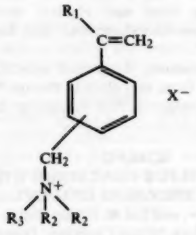


and $(-CH_2CH_2O)_nH$ where n is an integer 1 or more and X^- is an anion,



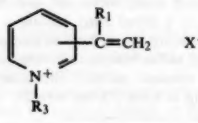
(II)

wherein R_1 is hydrogen or a C_1–C_4 alkyl, R_2 is hydrogen, alkyl or substituted alkyl, and R_3 and X^- are as defined in formula (I),



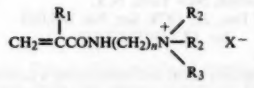
(III)

wherein R_1, R_2, R_3 and X^- are as defined in formula (I),



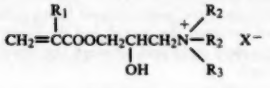
(IV)

wherein R_1, R_3 and X^- are as defined in formula (I),



(V)

wherein R_1, R_2, R_3 and X^- are as defined in formula (I), and n is an integer 1, 2 or 3 and



(VI)

wherein R_1, R_2, R_3 and X^- are as defined in formula (I), and

(ii) from about 95 mole percent to about 5 mole percent of at least one ethylenically unsaturated nonionic monomer selected from the group consisting of N-vinyl pyrrolidone, ethylenically unsaturated monomers having amide functionality, and ethylenically unsaturated monomers having hydroxyl functionality, the amount of prepolymer (2) employed in preparing the graft copolymer particles being from about 1 part to about 25 parts by weight for each 100 parts by weight of monomer (1) employed.

4,248,940

THERMAL BARRIER COATING FOR NICKEL AND COBALT BASE SUPER ALLOYS

George W. Goward, North Haven; Delton A. Grey, Vernon, both of Conn., and Richard C. Krutenat, Richland, Wash., assignors to United Technologies Corporation, East Hartford, Conn.

Division of Ser. No. 612,439, Sep. 11, 1975, abandoned. This application Jun. 30, 1977, Ser. No. 811,807

Int. Cl.[3] B32B *15/04*

U.S. Cl. 428—633 **11 Claims**

1. In a thermally protected superalloy structure which comprises a substrate of a material selected from the group consisting of nickel and cobalt-base superalloys, a metal bond coat on said substrate and an oxide stabilized zirconia-base ceramic thermal barrier coating on said bond coat, the improvement wherein said bond coat is an alloy of chromium, aluminum and yttrium with a metal selected from the group consisting of iron, cobalt, nickel and a mixture of nickel and cobalt.

9. A method of coating surfaces of nickel-base and cobalt-base alloys comprising:

a. coating said surfaces with a bond coating consisting essentially of a material selected from the group consisting of NiCrAlY and CoCrAlY and mixtures thereof; and

coating the coated surfaces formed in step (a) with a thermal barrier coating consisting essentially of an oxide stabilized zirconia.

4,248,941

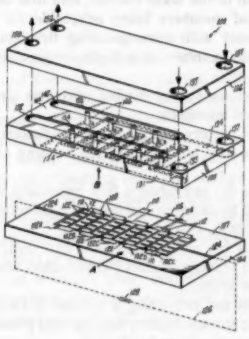
SOLID ELECTROLYTE ELECTROCHEMICAL CELL

George A. Louis, West Hartford; John M. Lee, Bloomfield; Donald L. Maricle, and John C. Trocciola, both of Glastonbury, all of Conn., assignors to United Tecnologies Corporation, Hartford, Conn.

Filed Dec. 26, 1979, Ser. No. 107,191

Int. Cl.[3] H01M *8/10*

U.S. Cl. 429—13 **21 Claims**



1. A plurality of electrochemical cells for the production of electricity from a gaseous fuel and a gaseous oxidant, each cell comprising:

an anode electrode comprising a thin layer of anode catalyst adapted to electrochemically oxidize a gaseous fuel;

a cathode electrode comprising a thin layer of cathode catalyst adapted to electrochemically reduce a gaseous oxidant, said anode and cathode catalyst layers being laterally spaced apart and in close proximity to each other with a gap being defined between said layers;

means for feeding a gaseous fuel to said anode electrode and a gaseous oxidant to said cathode electrode and for removing spent fuel and oxidant from said cells; and

solid electrolyte means comprising electrolyte material bridging said gap between said anode and cathode catalyst layers to provide an ion conductive path therebetween, wherein said cells are laterally disposed relative to each other, each

of said cells being adjacent at least one other of said cells, the cathode catalyst layer on one cell of each adjacent pair of cells being in close proximity to the anode catalyst layer of the other cell of said same adjacent pair of cells with a space being defined between said last mentioned anode and cathode catalyst layers, and electrically conductive material bridging said spaces and connecting said plurality of cells electrically in series to form a cell-group.

4,248,942

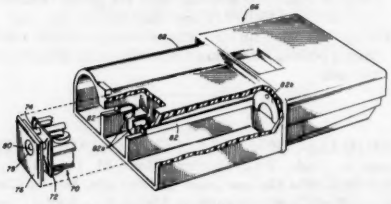
ELECTRICAL DEVICE WITH BI-LEVEL BATTERY STATE-OF-CHARGE INDICATOR

Richard L. Eby, Marshfield, and Lester E. Wilson, Bedford, both of Mass., assignors to Anderson Power Products, Inc., Boston, Mass.

Division of Ser. No. 72,879, Sep. 6, 1979. This application Apr. 28, 1980, Ser. No. 144,722

Int. Cl.³ H01M *10/48*

U.S. Cl. 429—93 **6 Claims**



1. A plural-pole, genderless electrical connector with bi-level battery state-of-charge indicator comprising:

1. a hollow insulated housing means having:

(a) First and second rigid terminal members positioned within said housing means and carried in detached relation to the walls thereof, said first and second rigid terminal members being adaptable for telescopic engagement with corresponding first and second rigid terminal members of a duplicate genderless connector; and,

(b) means for spring biasing said first and second rigid terminal members;

2. a bi-level battery state-of-charge indicator mounted with respect to said hollow insulated housing means and comprising:

(a) means for providing a first indication when a voltage applied to said first and second rigid terminals reaches a preselected, first voltage level;

(b) means for maintaining said first indication until the applied voltage reaches a preselected, second and lower voltage level;

(c) means for providing a second indication when the electric storage battery reaches said preselected, second and lower voltage level; and,

(d) means for continuing the second indication until the applied voltage again reaches said preselected, first voltage level.

5. An electric storage battery assembly comprising in combination:

1. A plural-pole, genderless electrical connector with bi-level battery state-of-charge indicator comprising:

A. a hollow insulated housing means having:

(i) first and second rigid terminal members positioned within said housing means and carried in detached relation to the walls thereof, said first and second rigid terminal members being adaptable for telescopic engagement with corresponding first and second rigid terminal members of a duplicate genderless connector; and,

(ii) means for spring biasing said first and second rigid terminal members;

B. an electric storage battery having positive and negative terminals;

c. first and second battery cables electrically connected at one end to said position and negative battery terminals, respectively, and at the other end to said first and second rigid terminals;

D. a bi-level battery state-of-charge indicator mounted with respect to said hollow insulated housing means and comprising:

(a) means for providing a first indication when a voltage applied to said first and second rigid terminals from said electric storage battery reaches a preselected, first voltage level;

(b) means for maintaining said first indication until the applied voltage from said electric storage battery reaches a preselected, second and lower voltage level;

(c) means for providing a second indication when the applied voltage from said electric storage battery reaches said preselected, second and lower voltage level; and,

(d) means for continuing the second indication until the applied voltage from said electric storage battery again reaches said preselected, first voltage level.

4,248,943

SODIUM SULFUR CONTAINER WITH CHROMIUM/CHROMIUM OXIDE COATING

Frank A. Ludwig, Irvine, and Lin R. Higley, Santa Ana, both of Calif., assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 21, 1980, Ser. No. 142,554

Int. Cl.³ H01M *2/02*

U.S. Cl. 429—104 **7 Claims**

1. In a sodium sulfur battery the improvement which comprises:

electrically conducting components of said battery comprised of a metal or a metal alloy having a chromium/-chromium oxide coating on surfaces in contact with molten polysulfide and sulfur reactants during battery operation, the oxygen content of said chromium/chromium oxide coating being at least 2% by weight.

4,248,944

SEALS FOR ELECTROCHEMICAL CELLS

Nicholas J. Smilanich, Rocky River, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Filed Dec. 21, 1979, Ser. No. 106,025

Int. Cl.³ H01M *2/08*

U.S. Cl. 429—185 **9 Claims**

1. A sealed electrochemical cell comprising a cathodic material, an anodic material and an electrolyte housed in the container sealed at its open end by a closure means which comprises a cover, a nonconductive gasket and a layer selected from the group consisting of a polyamide, an epoxy resin, asphalt and a cured epoxypolyamide resin, said gasket and said layer disposed and compressed between the interface of the cover and the container; the improvement being a thin film of parylene disposed between the gasket and the layer interface thereby forming a fluid tight seal between the cover and the container of the cell.

4,248,945

DRY CELL BATTERY

Mario Y. Alvarez, and Oscar Mejia, both of Avenida 39 No. 14-92, Bogota, Colombia

Continuation-in-part of Ser. No. 657,293, Feb. 11, 1976, which is a continuation-in-part of Ser. No. 446,900, Feb. 28, 1974, abandoned. This application Mar. 1, 1977, Ser. No. 773,153

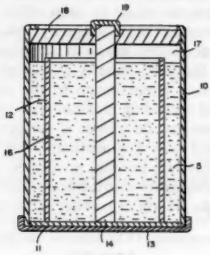
Claims priority, application Colombia, Nov. 9, 1973, 142075

Int. Cl.³ H01M *6/06*

U.S. Cl. 429—194 **17 Claims**

1. In a dry cell battery having at least two electrodes spaced one from another, an electrolyte positioned between said two

electrodes and a depolarizing mixture positioned adjacent one of said electrodes, the improvement wherein the depolarizing



mixture consists essentially of carbon black, an oxygen producing substance, paste of fruit of the carica papaya and urine.

4,248,946

CELL HAVING AN ALKALI METAL ANODE, A FLUORINATED CARBON CATHODE AND AN ELECTROLYTE WHICH INCLUDES AN ALKALI METAL HALIDE SALT AND A SOLVENT SYSTEM CONSISTING OF AN ETHER SOLVENT AND A CYCLIC CARBONATE COSOLVENT

Paul A. Malachesky, Berkeley Heights, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Oct. 30, 1978, Ser. No. 955,645
Int. Cl.³ H01M *6/14*
U.S. Cl. 429—197 **22 Claims**

1. A current producing cell, comprising:
(a) an anode containing alkali metal as its anode-active material;
(b) a cathode containing as a cathode-active material a compound of fluorine and carbon; and,
(c) an electrolyte containing:
(i) a mixed solvent system consisting of about 20 to about 80 percent by volume, based on the total solvent volume, of one or more ethers, and about 80 to about 20 percent by volume, based on the total solvent volume, of one or more cyclic carbonate cosolvents; and,
(ii) one or more alkali metal halide salts having the formula:

ZX

wherein Z in an alkali metal and wherein X is a halogen selected from the group consisting of chlorine and fluorine.

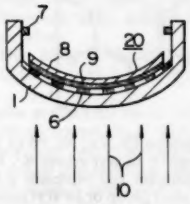
4,248,947

METHOD FOR MASTER PATTERN PRODUCTION

Mitsuru Oikawa, Tokyo, Japan, assignor to Hitachi, Ltd., Japan

Filed Nov. 18, 1977, Ser. No. 852,979
Claims priority, application Japan, Dec. 1, 1976, 51-143333; Dec. 1, 1976, 51-143334; Dec. 1, 1976, 51-143335; Jan. 10, 1977, 52-834
Int. Cl.³ G03C *5/00, 5/06*
U.S. Cl. 430—5 **17 Claims**

1. A method for producing a master pattern, to be used for forming a coating on the internal surface of a glass face panel of a color picture tube phosphor screen, comprising steps of:
(a) using said glass face panel of a color picture tube having two opposed surfaces, an internal surface and an external surface, the internal surface of said glass face panel being adapted to have a coating formed thereon, forming an image of at least part of an interchangeable shadow mask on the internal surface of the glass face panel;
(b) arranging a photosensitive plate in such a manner that a photosensitive film of said photosensitive plate is in close contact with said image of said interchangeable shadow mask formed on said internal surface of said face panel;
(c) exposing said photosensitive plate by directing flood light from the outside of said face panel through said external and internal surfaces and through said image; and



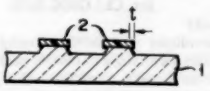
(d) forming said image on said photosensitive plate by developing and fixing said photosensitive plate, whereby a master pattern for forming said coating on the internal surface of said glass face panel is formed.

4,248,948

PHOTOMASK

Takashi Matsuda, Kasugai, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Japan

Filed Mar. 28, 1977, Ser. No. 782,069
Claims priority, application Japan, Mar. 30, 1976, 51-34829
Int. Cl.³ G03C *5/00, 11/00*
U.S. Cl. 430—5 **5 Claims**



1. A photomask to pattern a photoresist of a semi-conductor during fabrication of a semiconductor device, said photomask being placed to face said photoresist and being exposed to light, said photomask comprising a substrate pervious to light and means for elimination of gas generated during said exposure to light, said means including one or more transparent islands formed on and projecting from one surface of the substrate, and one or more opaque islands formed on and projecting from the same surface of the substrate spaced from the transparent islands, the thickness of said transparent islands being greater than that of said opaque islands, said transparent islands being formed of silicate glass, silicon dioxide, phosphosilicate glass, or trisilicon tetranitride, and said opaque islands being formed of a metal or a metal oxide.

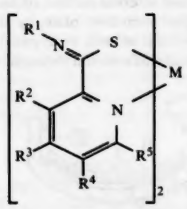
4,248,949

METHOD FOR STABILIZING ORGANIC SUBSTRATE MATERIALS INCLUDING PHOTOGRAPHIC DYE IMAGES AGAINST THE ACTION OF LIGHT AND A PHOTOGRAPHIC MATERIAL SO STABILIZED

Hiroshi Hara, Asaka; Kotaro Nakamura, and Yoshiaki Suzuki, both of Minami-ashigara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Dec. 15, 1978, Ser. No. 969,892
Claims priority, application Japan, Dec. 15, 1977, 52-151096
Int. Cl.³ G03C *7/00*
U.S. Cl. 430—17 **13 Claims**

6. A color photographic material comprising at least one layer containing a photographic dye image wherein said layer or an adjacent layer contains a compound of the formula (I):



(I)

wherein M represents a Cu, Co, Ni, Pd or Pt atom; R^1 represents an alkyl group or an aryl group; R^2, R^3, R^4 and R^5 may be the same or different and represent a hydrogen atom, a halogen atom, an alkyl group or an aryl group; and further, R^2 and R^3, R^3 and R^4 or R^4 and R^5 may combine to form a 6-membered ring, said compound of the formula (I) being present in a stabilizing amount for stabilizing said color photographic material against the action of light while not adversely affecting color hue as well as color purity of the color photographic material.

4,248,950

ELECTROSTATIC DEVELOPER MIX CONTAINING EITHER MOS_2, TIS_2, WS_2 OR GRAPHITE AS LUBRICANT

Virgil W. Westdale, Chagrin Falls, and Charles A. Kumins, Gates Mills, both of Ohio, assignors to AM International, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 362,981, May 23, 1973. This application Apr. 21, 1975, Ser. No. 570,279

Int. Cl.[2] G03G *9/10*

U.S. Cl. 430—31 **9 Claims**

1. A dry developer mix for developing electrostatic latent images comprising a mixture of carrier particles and pigmented thermoplastic resin toner particles and a particulate material additive selected from the group consisting of molybdenum disulfide, titanium disulfide, tungsten disulfide and graphite, and present in said developer mix in the range of from about 0.005 to about 1.0 weight percent based on the weight of said carrier particle, whereby said developer mix is capable of resisting fatigue for prolonged periods of time under high output duplicating machine conditions.

4,248,951

METHOD OF IMAGE FORMATION WITH A SCREEN ELEMENT AND CHARGING MEANS

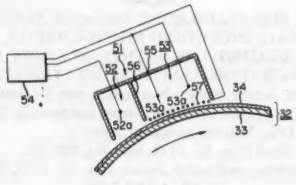
Yujiro Ando, Yokohama, and Katsunobu Ohara, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan and Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 750,568, Dec. 14, 1976, abandoned. This application Feb. 5, 1979, Ser. No. 9,590

Claims priority, application Japan, Dec. 22, 1975, 50-153117

Int. Cl.[3] G03G *13/22*

U.S. Cl. 430—53 **15 Claims**



1. A method of image formation comprising the steps of forming a primary electrostatic latent image on a photosensitive screen having a number of fine openings, using said primary electrostatic latent image to modulate a flow of ions to form a secondary electrostatic latent image on a repetitively usable recording medium under an electric field provided by a bias potential difference between the screen and the recording medium adjacent to a position at which the screen and the recording medium are close to each other, developing said secondary electrostatic latent image by means of a developer, transferring the developed image to a transfer member, applying a charge of the same polarity as that of the ions used to form the secondary latent image to the residual developer remaining on said recording medium after said image transfer such that said residual developer is subjected to a force directed toward said recording medium under said electric field to thereby prevent said residual developer from adhering to said screen, and thereafter moving said recording medium to a position for the formation of another secondary latent image.

4,248,952

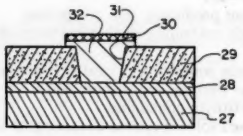
TECHNIQUE FOR MAKING ELECTRICAL GROUND CONTACT WITH THE INTERMEDIATE CONDUCTIVE LAYER OF AN ELECTROSTATOGRAPHIC RECORDING MEMBER

John M. Paulin, South Hadley Falls, and Richard W. Fournier, Holyoke, both of Mass., assignors to James River Graphics Inc., South Hadley, Mass.

Continuation of Ser. No. 770,046, Feb. 18, 1977, abandoned, which is a continuation of Ser. No. 667,081, Mar. 15, 1976, abandoned, which is a continuation of Ser. No. 434,398, Jan. 18, 1974, abandoned. This application Feb. 14, 1978, Ser. No. 898,579

Int. Cl.[3] G03G *5/04*

U.S. Cl. 430—62 **13 Claims**



1. An improved electrostatograhic recording member comprising:

an electrically-insulating substrate;

an electrically-conductive intermediate layer overlying the upper surface of said substrate;

an electrically-insulating outer layer overlying the upper surface of said conductive layer, said outer layer comprising a photoconductive material or a dielectric material of high volume resistivity; and

improved means for establishing electrical connection from said conductive layer to a ground, said means comprising:

(a) a hole in a non-image area of said recording member, said hole extending from the upper or lower exterior surface of said recording member at least to said conductive layer; and

(b) an insert member, said insert member being confined to said non-image area of said recording member, having a maximum resistance of 10^9 ohm cm and comprising:

(1) an electrically conductive adhesive composition disposed in said hole, said conductive adhesive composition comprising an adhesive and a sufficient amount of an electrically-conductive material to make said composition conductive, said conductive adhesive composition being positioned in said hole such that said conductive adhesive composition is in electrical contact with said conductive layer; and

(2) a conductive metallic foil, covering and integrally bonded to the outer surface of said conductive adhesive composition disposed in said hole, for reducing the contact resistance between ground and said conductive

adhesive composition, said conductive adhesive composition and said metallic foil being confined to said non-image area of said recording member, said conductive adhesive composition providing the sole electrically-conductive path between said conductive layer of said recording member and said metallic foil, said metallic foil being adapted for electrical contact to ground.

4,248,953

PROCESS FOR THE PRODUCTION OF PHOTOCONDUCTIVE ZINC OXIDE OF IMPROVED ELECTROPHOTOGRAPHIC PROPERTIES, AND PRODUCT THEREOF

Charles L. Thomas, and Sam C. Carapella, both of South Plainfield, N.J., assignors to ASARCO Incorporated, New York, N.Y.

Continuation-in-part of Ser. No. 879,300, Feb. 21, 1978, abandoned. This application May 3, 1979, Ser. No. 35,653

Int. Cl.[3] **G03G** *5/08*

U.S. Cl. 430—88 **10 Claims**

1. A method for increasing the discharge speed of photoconductive zinc oxide particles by at least 10% relative to the discharge speed of the corresponding untreated zinc oxide particles comprising

(a) mixing said zinc oxide particles with from about 0.01% to 0.03% tellurium calculated as Te and based on the weight of zinc oxide; and

(b) contacting the resulting mixture with a free-oxygen-containing gas while heating the mixture at a temperature from about 300° C. to about 450° C. for a time sufficient to result in said at least 10% increase in said discharge speed and less than the time resulting in sintering of said mixture, said time being at least about 10 minutes and less than about 90 minutes.

4,248,954

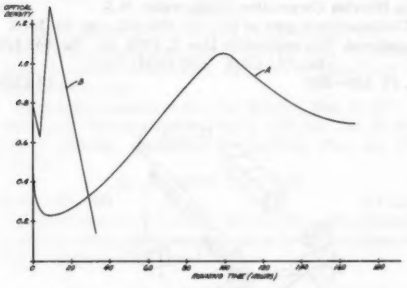
COATED CARRIER PARTICLES FOR USE IN ELECTROPHOTOGRAPHIC PROCESS

Pabitra Datta, Cranbury, N.J.; Virgil W. Westdale, Chagrin Falls, Ohio, and John Novotny, Jr., San Jose, Calif., assignors to AM International, Inc., Los Angeles, Calif.

Filed Sep. 7, 1977, Ser. No. 831,148

Int. Cl.[3] **B05D** *1/04*

U.S. Cl. 430—97 **21 Claims**



1. A carrier for use in electrophotographic development of latent electrostatic images capable of inducing an electrostatic charge in a toner mixed therewith which comprises a core member selected from the group consisting of metallic particles and siliceous particles to the surface of which is adhered a surface member selected from the group consisting of perfluorinated and substantially perfluorinated carboxylic acids containing from 3 to 18 carbon atoms and salts, esters and amides thereof in a polymeric binder therefor wherein said polymeric binder is selected from the group consisting of polycarbonate resins, polyester resins, polyamide resins, polyurethane resins, epoxy resins, acrylic resins, novolak resins, and heat curable silicone rubbers.

4,248,955

PHOTOGRAPHIC PROCESSES AND PRODUCTS

George H. Nawn, Westwood, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 26, 1979, Ser. No. 106,755

Int. Cl.[3] **G03C** *1/40, 5/54, 7/00, 5/30*

U.S. Cl. 430—219 **23 Claims**

13. A photographic product for use in forming a multicolor diffusion transfer image comprising a photosensitive element comprising a support carrying a blue-sensitive silver halide emulsion having a yellow dye developer associated therewith, a green-sensitive silver halide emulsion having a magenta dye developer associated therewith and a red-sensitive silver halide emulsion having a cyan dye developer associated therewith, a second sheet-like element positioned in superposed or superposable relationship with said photosensitive element, an image receiving layer positioned in one of said elements, a rupturable container releasably holding an aqueous alkaline processing composition adapted, when distributed between a pair of predetermined layers carried by said photosensitive element and said second element to develop said silver halide emulsions and provide a multicolor diffusion transfer image on said image-receiving layer, said product including an oligomer represented by the formula

$$R_1O(CH_2CH_2O)_mR_2$$

wherein R_1 and R_2 each independently is $—CH_3$ or $—C_2H_5$ and m is an integer of from 4 to 10.

4,248,956

PHOTOGRAPHIC PRODUCTS AND PROCESSES EMPLOYING HETEROCYCLIC AZO DYE DEVELOPER COMPOUNDS

Brian D. Baigrie, New Denham; Joseph Bailey, Harrow; Linda G. Johnston, Harrow, and Miroslav V. Mijovic, Harrow, all of England, assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 822,188, Aug. 5, 1977, Pat. No. 4,142,891. This application Mar. 2, 1979, Ser. No. 16,998

The portion of the term of this patent subsequent to Mar. 6, 1996, has been disclaimed.

Int. Cl.[3] **G03C** *1/40, 5/54, 1/10, 7/00*

U.S. Cl. 430—225 **26 Claims**

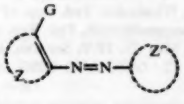
11. In a photographic assemblage comprising:

(a) a photographic element comprising a support having thereon at least one photosensitive silver halide emulsion layer having associated therewith a diffusible dye developer compound;

(b) a dye image-receiving layer; and

(c) an alkaline processing composition and means for discharging same within said assemblage;

said assemblage containing a silver halide developing agent, the improvement wherein said dye developer has the following formula:



wherein:

Z represents the atoms necessary to complete a phenyl group;

Z' represents a pyrazolotriazole nucleus;

G is a metal chelating group, a salt thereof or a hydrolyzable precursor thereof; said compound also containing a silver halide developing moiety which is capable of developing

an exposed silver halide emulsion under photographic processing conditions, and wherein said dye image-receiving layer or a layer adjacent thereto contains metal ions.

4,248,957

ACID DEGRADABLE RADIATION-SENSITIVE MIXTURE

Jürgen Sander, Kelkheim; Detlef Skaletz, Mainz; Gerhard Buhr, Königstein, and Gerhard Lohaus, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

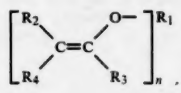
Filed Jul. 5, 1979, Ser. No. 54,808

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1978, 2829511

Int. Cl.[3] **G03C** *1/68, 5/00*

U.S. Cl. 430—270 **8 Claims**

1. In a radiation-sensitive mixture containing (a) a compound which forms an acid under the influence of actinic radiation and (b) a compound which has at least one acid-cleavable C—O—C group and the solubility of which in a liquid developer is increased by the action of an acid, the improvement that compound (b) corresponds either to the general formula I



(I)

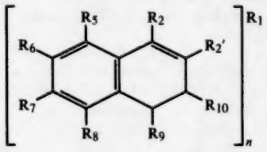
wherein

R_1 is an n-valent aliphatic group which has at least 2 carbon atoms,

R_2, R_3, & R_4 are identical or different and are hydrogen atoms, alkyl or aryl groups or any two thereof are linked to form a saturated or olefinically unsaturated ring, and

n is an integer from 1 to 4,

or to the general formula II



(II)

wherein

R_2 and R_2' are groups which differ from each other, one of the groups representing the —O-group and the other a hydrogen atom, an alkyl or aryl group,

R_5 to R_{10} are identical or different and are hydrogen atoms or halogen atoms, alkyl, aryl or alkoxy groups, and

R_1 and n have the meanings stated above.

4,248,958

PHOTOPOLYMERIZABLE MIXTURE CONTAINING POLYURETHANES

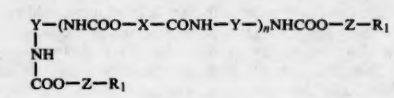
Raimund J. Faust, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed May 23, 1979, Ser. No. 41,808

Int. Cl.[3] **G03C** *1/68;* **C08G** *18/00*

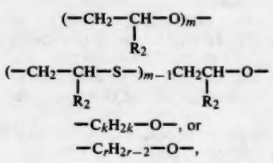
U.S. Cl. 430—288 **10 Claims**

1. A photopolymerizable mixture comprising a polymeric binder which is soluble or swellable in aqueous-alkaline solutions, a photoinitiator, a compound with at least two terminal acrylic or methacrylic acid ester groups and a boiling point above 100° C. which is capable of addition polymerization, and between 5 and 40 percent by weight, based on the weight of non-volatile components of the mixture, of a polyurethane corresponding to the following Formula I



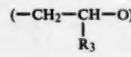
wherein

—X— is one of the following groups:



Y is a saturated aliphatic or cycloaliphatic group with 2 to 12 carbon atoms,

Z is



R_1 is R_4 or CONH—R_4,

R_2 and R_3 are hydrogen atoms or methyl groups,

R_4 is a saturated aliphatic group with 1 to 20 carbon atoms,

n is zero or a whole number from 1 to 15,

m is a whole number from 2 to 4,

p is zero or a whole number from 1 to 4,

k is a whole number from 2 to 12,

r is a whole number from 4 to 12,

n+p is a whole number from 1 to 19, **and wherein**

R_1 is R_4 if p=0, and R_1 is CONH—R_4 if n=0.

4,248,959

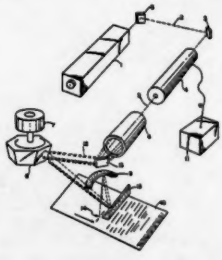
PREPARATION OF DIAZO PRINTING PLATES USING LASER EXPOSURE

William Jeffers, Fair Haven; Douglas Seeley, High Bridge, both of N.J.; Raimund J. Faust, Wiesbaden, Fed. Rep. of Germany, and Shuchen Liu, New Providence, N.J., assignors to American Hoechst Corporation, Bridgewater, N.J.

Continuation-in-part of Ser. No. 694,641, Jun. 10, 1976, abandoned. This application Dec. 7, 1978, Ser. No. 967,524

Int. Cl.[2] **G03F** *7/08;* **G03G** *5/18*

U.S. Cl. 430—300 **14 Claims**



1. In a photochemical process for the preparation of printing plates wherein a printing plate comprising a photosensitive composition coated on a support is exposed to a pattern of laser light, the intensity of which light is modulated in accordance with an input source of information, and said printing plate is subsequently developed by removal from said support of that

portion of the photosensitive coating composition which is not exposed to said pattern of laser light,

the improvement comprising utilizing a pattern of laser light generated by a laser which has a significant emission of light at a wavelength greater than about 450 nm, and utilizing as a photosensitive composition a mixture consisting essentially of: (1) a negative-working condensate or a para-amino benzene diazonium compound present in an effective amount sufficient to sensitize said photosensitive composition to laser light, and (2) a colorant capable of absorbing light in the spectral range between about 450–550 nm, said colorant selectively sensitizing the condensate to said laser light at a wavelength greater than about 450 nm, and being selected from the group consisting of azo, triarylmethane, xanthene and methine compounds.

4,248,960
RADIATION RESPONSIVE RELIEF IMAGEABLE PLASTIC LAMINATE

Paul R. Hein; Michael W. Yang; Robert A. Irvin; Steven E. Bauer, all of Marietta, and Roland L. Orem, Douglasville, all of Ga., assignors to W. R. Grace & Co., Cambridge, Mass.

Filed Jan. 23, 1978, Ser. No. 871,748

Int. Cl.[2] **G03F** *7/02*

U.S. Cl. 430—306 **14 Claims**

1. The method of forming a printing plate which comprises exposing to actinic radiation projected through an image-bearing transparency selected portions of a radiation curable structure comprising

an over-lamina not more than 85 mils thick of an actinic radiation curable C—C unsaturated natural-like rubber composition comprised of C—C unsaturated polymeric resin characterized by relief differentiation in response to patterned radiation exposure and a resilient creep stabilizing under-lamina composition comprising (1) at least about 20% by weight of said composition of monoalkenyl aromaticdiene copolymer resin, and (2) at least about 2% by resin weight of at least one monomer substantially compatible with said resin and having at least one radiation crosslinkable C—C double bond,

for a time sufficient to cure the radiation curable composition in the exposed portions and thereafter removing the unexposed radiation curable composition.

4,248,961
MATERIAL FOR COLOR PHOTOGRAPHY

Remon Hagen, Chemin Foret, and Mario Fryberg, Praroman-le-Mouret, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

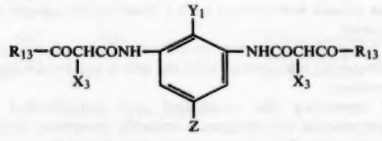
Continuation-in-part of Ser. No. 859,499, Dec. 9, 1977, abandoned. This application May 2, 1979, Ser. No. 35,362

Claims priority, application Switzerland, Dec. 24, 1976, 16310/76

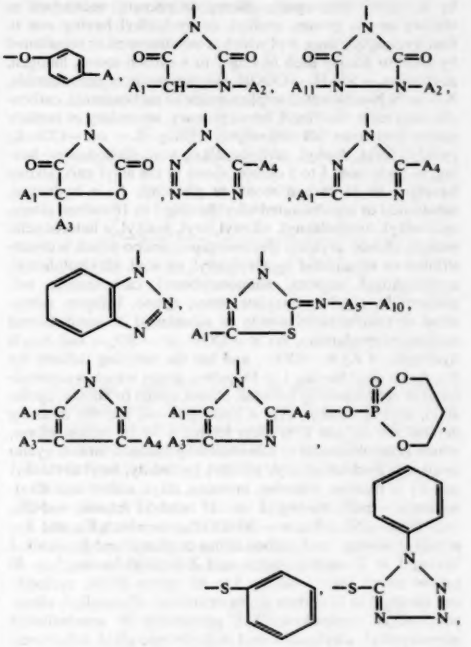
Int. Cl.[3] **G03C** *7/00, 1/40*

U.S. Cl. 430—381 **13 Claims**

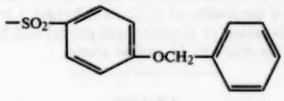
1. A light sensitive recording material for colour photography which contains in at least one silver halide emulsion layer a yellow coupler of the formula



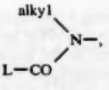
in which R_{13} is straight-chain or branched alkyl having 3 to 10 carbon atoms, cyclopentyl, cyclohexyl, adamantyl, phenyl or phenyl substituted by fluorine, chlorine or bromine or alkyl or alkoxy each having 1 to 4 carbon atoms, X_3 is hydrogen, chlorine or a radical of the formulae



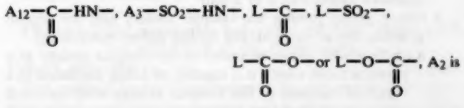
in which A is —COOH, —NO_2, —$COOR_{14}$, in which R_{14} is alkyl having 1 to 4 carbon atoms, or the radical of the formula



A_1 is hydrogen, alkyl having 1 to 18 carbon atoms, aralkyl, aryl, cycloalkyl having one to four cycloalkyl rings, alkoxy having 1 to 18 carbon atoms, aryloxy, alkylmercapto having 1 to 18 carbon atoms, arylmercapto, halogen, trifluoromethyl, cyano, —NH_2, mono- or a di-alkylamino, in which the alkyl radicals each contain 1 to 18 carbon atoms,



in which alkyl contains 1 to 5 carbon atoms,



straight-chain or branched alkyl having 1 to 18 carbon atoms, aralkyl, preferably benzyl, or phenyl substituted by alkyl,

alkoxy, halogen, —NH_2, alkylamino, dialkylamino, acylamino, —COOH, carbalkoxy, carboxamido, sulphonyl, sulphonamido or alkylmercapto, A_3 is non-branched or branched alkyl having 1 to 18 carbon atoms which is unsubstituted or substituted by halogen, nitro, cyano, alkoxy or primary, secondary or tertiary amino groups, aralkyl, or cycloalkyl having one to four cycloalkyl rings; aryl which is unsubstituted or substituted by alkyl or alkoxy each having 1 to 4 carbon atoms, halogen, acylamino, —SO_3H, —COOH, sulphonamide or carboxamide, N— or N,N-substituted sulphonamide or carboxamide, carboxylic acid ester, hydroxyl, nitro, primary, secondary or tertiary amine, mercapto, alkylmercapto, —SO_2—L— or —CO—L; pyridyl, furyl, thienyl, perfluoroalkyl, acyl, dialkylamino having, in each case, 1 to 5 carbon atoms in the alkyl part, alkoxy having 1 to 18 carbon atoms or phenoxy, A_4 is hydrogen, substituted or unsubstituted alkyl having 1 to 18 carbon atoms, cycloalkyl, cycloalkenyl, alkenyl, aryl, aralkyl, a heterocyclic radical, alkoxy, aryloxy, alkylmercapto, amino which is unsubstituted or substituted by alkyl, aryl, or acyl, alkylsulphonyl, arylsulphonyl, acyloxy, aminosulphonyl, carboxamide, sulphonamide, alkyl carboxylate, nitro, cyano, halogen, substituted or unsubstituted ureido or substituted or unsubstituted aminosulphonylamino, A_5 is —CO— or —SO_2— and A_{10} is hydrogen, if A_5 is —CO—, and has the meaning defined for A_3, A_{11} is alkyl having 1 to 18 carbon atoms which is unsubstituted or substituted by halogen, amino, cyano or alkoxy, cycloalkyl, aryl or aralkyl, A_{12} is hydrogen and has the meaning defined for A_3 and L is alkyl having 1 to 18 carbon atoms, which is unsubstituted or substituted by halogen, amino, cyano or alkoxy, cycloalkyl, aryl, pyridyl, pyrimidly, furyl or thienyl and Y_1 is fluorine, chlorine, bromine, alkyl, alkoxy and alkylmercapto, each having 1 to 12 carbon atoms, —NH_2, —NHR_{10}, —$NR_{10}R_{11}$ or —$NHCOR_{12}$, in which R_{10} and R_{11} are alkyl having 1 to 5 carbon atoms or phenyl and R_{12} is alkyl having 1 to 12 carbon atoms, and Z is alkyl having 5 to 40 carbon atoms, alkoxy having 5 to 40 carbon atoms, cycloalkoxy having 5 to 12 carbon atoms or aralkyl; alkoxyalkyl, alkoxycycloalkyl, cycloalkoxyalkyl, substituted or unsubstituted phenoxyalkyl, alkylamino- and dialkylamino-alkyl, substituted or unsubstituted arylamino- and diarylamino-alkyl, alkylmercaptoalkyl or substituted or unsubstituted arylmercaptoalkyl, in which radicals the sum of the carbon atoms in each case is 6 to 40; or —$COOR_3$, —COR_3, —NR_3R_4, —$CONR_3R_4$, —NR_4COR_3, —SO_2R_3, —$SO_2NR_3R_4$ or —$NR_4SO_2R_3$, R_3 is substituted or unsubstituted alkyl having 1 to 40 carbon atoms, substituted or unsubstituted cycloalkyl having 5 to 12 carbon atoms or substituted or unsubstituted phenyl and R_4 is hydrogen or alkyl having 1 to 12 carbon atoms.

4,248,962

PHOTOGRAPHIC EMULSIONS, ELEMENTS AND PROCESSES UTILIZING RELEASE COMPOUNDS

Philip T. S. Lau, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 864,126, Dec. 23, 1977, abandoned. This application Dec. 22, 1978, Ser. No. 972,614

Int. Cl.³ G03C *7/00, 1/40*

U.S. Cl. 430—382 **63 Claims**

55. A process of forming a photographic image which comprises developing an exposed silver halide emulsion layer with a color developing agent in the presence of a photographic coupler wherein the photographic coupler contains

a coupler moiety,

a photographic dye or reagent, containing a hetero atom from Group VA or VIA of the periodic table having a negative valence of 2 or 3 and

a timing group joining the coupler moiety and the photographic dye or reagent, the timing group comprising

a nucleophilic group attached to the coupler moiety at a position from which it is capable of being displaced as a result of reaction of the coupler moiety with oxidized color developing agent,

an electrophilic group attached to said hetero atom in the photographic dye or reagent and capable of being displaced therefrom by said nucleophilic group after said nucleophilic group is displaced from said coupler moiety, and

a linking group spatially relating the nucleophilic group and the electrophilic group to undergo, after cleavage of the bond between the timing group and the coupler moiety, an intramolecular nucleophilic displacement reaction which cleaves the bond between the photographic dye or reagent and the timing group.

4,248,963

METHOD OF PREVENTING THE FORMATION OF CONTACT SPOTS ON PHOTOGRAPHIC MATERIALS

Günter Kolb, and Bernhard Morcher, both of Leverkusen, Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 757,829, Jan. 10, 1977, abandoned. This application May 22, 1978, Ser. No. 908,570

Claims priority, application Fed. Rep. of Germany, Jan. 15, 1976, 2601377

Int. Cl.³ G03C *1/78, 3/00*

U.S. Cl. 430—501 **1 Claim**

1. In a process for producing rolled or stacked photographic materials having a silver halide emulsion on a support,

the steps of providing materials for the rolled or stacked material,

comprising providing a layer cast as a back coating on the opposite side of a support from said supported silver halide emulsion

including casting, as the outermost layer on a back coating on the surface of the support for the silver emulsion, a composition consisting essentially of gelatin and 2 to 20% by weight of the gelatin of a polymer dispersion,

said polymer dispersion being obtained by polymerizing a halogen-free vinyl monomer compound consisting of acrylonitrile, methylmethacrylate or mixtures thereof in the presence of a mixture comprising water and from 10 to 30% of polyvinyl alcohol or up to 20% of partially acetylated polyvinyl alcohol by weight of the monomer,

with an anionic emulsifier selected from the group consisting of long chain alkyl sulphonic acids having from 10 to 20 carbon atoms and their water soluble salts,

said back coating being contactible with said emulsion in producing the rolled or stacked photographic materials,

whereby said process enhances the suitability of the composition for minimizing contact spots at points of contact between the cast back coating and said emulsion.

4,248,964

DETECTION AND QUANTITATION OF NEISSERIA VIA RADIOIMMUNOASSAY OF AN ENZYME PRESENT IN NEISSERIA BACTERIA

Hugh C. McDonald, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Sep. 28, 1977, Ser. No. 837,360

Int. Cl.³ C12Q *1/66*

U.S. Cl. 435—7 **14 Claims**

1. A method for detecting Neisseria bacteria in a fluid sample via a radioimmunoassay technique consisting of the steps:

(1) bringing radiolabelled 1,2-propanediol dehydrogenase or its subunit into contact with a lysate of the sample to be tested;

(2) bringing an antiserum specific to 1,2-propanediol dehydrogenase into contact with the above and incubating the mixture;

(3) separating the unlabelled and radiolabelled 1,2-propanediol dehydrogenase-antibody complexes from the uncomplexed reactants in said mixture; and then

(4) monitoring either or both portions of the mixture for the presence of radiolabelled 1,2-propanediol dehydrogenase or its subunit.

4,248,965

IMMUNOCHEMICAL PROCESS OF MEASURING PHYSIOLOGICALLY ACTIVE SUBSTANCES

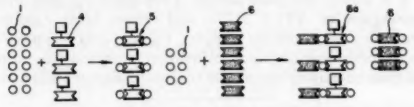
Ei Mochida, Tokyo; Nobuhisa Ogawa, Omiya; Hiroyuki Shinkai, Kawagoe, and Masakatsu Hashimoto, Tokyo, all of Japan, assignors to Mochida Seiyaku Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 3, 1977, Ser. No. 838,947

Claims priority, application Japan, Oct. 7, 1976, 51-120621; Oct. 7, 1976, 51-120622

Int. Cl.[2] G01N *33/54*

U.S. Cl. 435—7 **12 Claims**



1. An immunochemical measuring process comprising the steps of

(a) mixing and reacting a substance to be measured with a given amount of an insolubilized substance which is obtained by insolubilizing a substance specifically bindable with the substance to be measured,

(b) without separating the bound product comprising the substance to be measured and the insolubilized substance from the reaction mixture, reacting the reaction product produced in the step (a) with a given amount of a labelled substance which is obtained by labelling a substance specifically bindable with the substance to be measured with a labelling agent,

(c) separating the reaction product produced in step (b) into an insoluble reaction product which is the solid phase containing the labelled substance which is bound to the insolubilized substance, and a liquid reaction product which is liquid phase, containing the unbound labelled substance, and

(d) measuring the activity of either the labelled substance bound with said solid phase or the labelled substance existing in the liquid phase.

4,248,966

SYNTHESIS OF ISOPENICILLIN DERIVATIVES IN THE ABSENCE OF LIVING CELLS

Arnold L. Demain, Wellesley, Mass.; Toshio Konomi, Kobe, Japan, and Jack E. Baldwin, Oxford, England, assignors to Massachusetts Institute of Technology, Cambridge, Mass.

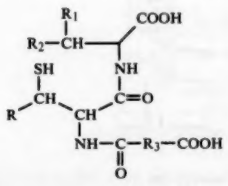
Filed May 17, 1979, Ser. No. 40,061

Int. Cl.[3] C12P *37/00*; C12R *1/75*

U.S. Cl. 435—43 **10 Claims**

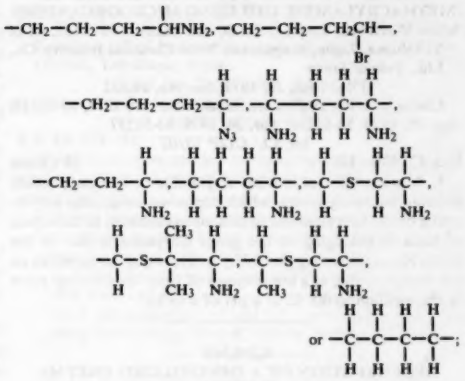
1. A process for producing an isopenicillin derivative which exhibits antimicrobial activity, said process comprising the steps of:

1. providing a starting material selected from the group consisting of:



δ(-L-α-aminoadipyl)-L-cysteinyl-D-valine or derivatives

wherein R, R_1, and R_2 are the same or different and are selected from the group consisting of hydrogen, methyl, ethyl, propyl, and isopropyl and R_3 is

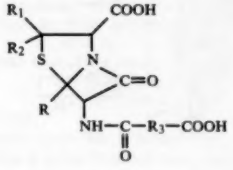


2. providing a cell-free extract or permeabilized cells of *Cephalosporium acremonium* containing a certain late enzyme(s) which has been inactivated so that the conversion cannot proceed beyond the isopenicillin stage;

3. contacting the extract and the starting material in a reaction vessel;

4. providing ATP as an energy source to said reaction; and

5. allowing a component of the extract to react with said starting material for a sufficient amount of time to produce an isopenicillin derivative of the formula:



4,248,967

ENZYMIC COMPLEXES ADAPTED TO CONVERT RACEMIC HYDANTOINS INTO OPTICALLY ACTIVE AMINOACIDS, AND THEIR APPLICATIONS

Aurelio Viglia, Monterotondo; Eugenio Fascetti, Rome; Elena Perricone, Rome, and Ludwig Degen, Rome, all of Italy, assignors to Snamprogetti S.p.A., Milan, Italy

Filed Mar. 10, 1978, Ser. No. 885,194

Claims priority, application Italy, Mar. 15, 1977, 21232 A/77

Int. Cl.[3] C12P *13/04*; C07B *19/02*

U.S. Cl. 435—106 **4 Claims**

1. A method for the preparation of N-carbamoyl-phenylglycine which comprises contacting 5-D,L-phenylhydantoin with an enzyme complex derived from *Bacillus brevis*-NRRL-B-11080 at a temperature of from 40°–60° C. until N-carbamoyl-phenylglycine is formed.

4,248,968

PROCESS FOR PRODUCING ACRYLAMIDE OR METHACRYLAMIDE UTILIZING MICROORGANISMS

Ichiro Watanabe; Yoshiaki Satoh, and Takayuki Takano, all of Yokohama, Japan, assignors to Nitto Chemical Industry Co., Ltd., Tokyo, Japan

Filed Mar. 28, 1979, Ser. No. 24,832
Claims priority, application Japan, Mar. 29, 1978, 53-35318; Apr. 28, 1978, 53-51236; Apr. 28, 1978, 53-51237
Int. Cl.[3] C12P *13/02*
U.S. Cl. 435—129 18 Claims

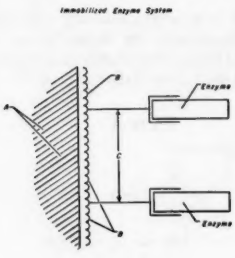
1. A process for producing acrylamide or methacrylamide utilizing microorganisms, which comprises subjecting acrylonitrile or methacrylonitrile in an aqueous medium to the action of bacteria belonging to the genus Corynebacterium or the genus Nocardia having the ability to hydrolyze acrylonitrile or methacrylonitrile, at a temperature of from the freezing point of the medium to 30° C. at a pH of 6 to 10.

4,248,969

REGENERATION OF A IMMOBILIZED ENZYME SYSTEM

Gene K. Lee, La Grange Park, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Aug. 22, 1979, Ser. No. 68,804
Int. Cl.[3] C12M *11/14, 11/08, 11/06;* B01J *31/40*
U.S. Cl. 435—176 7 Claims



1. A method for regenerating a used organic-inorganic support matrix comprising an organic polymeric material having functionalized pendant groups coupled with immobilized enzymes which method comprises:

(a) treating said used support matrix containing immobilized enzymes with a basic stripping agent selected from the group consisting of ammonia, ammonium carbonate, quatenary ammonium hydroxides and carbonates and hydroxides of alkali metals at stripping conditions which include a temperature of from about 20° C. to about 75° C.;

(b) washing said treated support matrix containing immobilized enzymes and said basic stripping agent to remove said basic stripping agent from said treated support matrix;

(c) treating said washed support matrix of step (b) with a bifunctional organic molecule selected from the group consisting of glutaraldehyde, succindialdehyde terephthaladehyde and toluendediisocyanate to attach pendant organic molecules to said washed support matrix wherein said pendant organic molecules attached to said support matrix are sufficient to replace former pendant organic molecules removed through said use of said support matrix;

(d) washing said support matrix containing said newly attached pendant organic molecules to remove excess organic molecules from said treatment of step (c); and

(e) immobilizing fresh active enzymes by coupling said enzymes to said newly attached pendant organic molecules.

4,248,970

ANTIBIOTIC COMPLEX PRODUCING BACTERIAL CULTURE

William T. Bradner, Manlius; James A. Bush, Fayetteville, and Donald E. Nettleton, Jr., Jordan, all of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 832,034, Sep. 9, 1977, Pat. No. 4,112,071, which is a continuation-in-part of Ser. No. 758,248, Jan. 10, 1977, abandoned, which is a continuation-in-part of Ser. No. 590,994, Jun. 27, 1975, abandoned. This application May 30, 1978, Ser. No. 910,314
Int. Cl.[3] C12N *1/20*
U.S. Cl. 435—253 1 Claim

1. A biologically pure culture of the microorganism *Streptosporangium sp.* ATCC 31129, said culture being capable of producing the antibiotic complex, figaroic acid complex, in a recoverable quantity upon cultivation in an aqueous nutrient medium containing assimilable sources of nitrogen and carbon.

4,248,971

INSTANT CULTURE MEDIA AND METHOD OF STERILIZING SAME

Kamal A. Youssef, P.O. Box 6548, W. Palm Beach, Fla.

Filed Jun. 8, 1978, Ser. No. 913,584
Int. Cl.[3] C12N *1/20*
U.S. Cl. 435—253 6 Claims

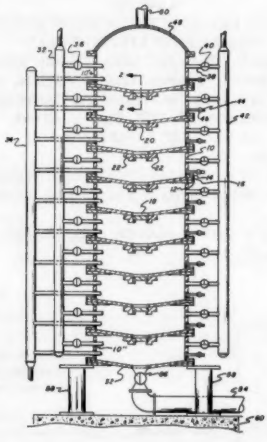
1. A culture medium comprising: from about 0.1 to about 4.0 percent of a gelling agent selected from the group consisting of agar agar, pectin, silica gel and carageenan; from about 0.015 to about 0.03 weight percent of at least one halogen-liberating sterilizing compound compatible with said gelling agent and capable of sterilizing said gelling agent in aqueous medium; and from about 7 to about 50 weight percent of nutrients.

4,248,972

STACKED MODULES FOR ANAEROBIC DIGESTION

David J. Fischer; Richard M. Narske, both of Sarasota; John C. Thomas, Orlando, and Edward J. Worthington, Jr., Sarasota, all of Fla., assignors to Universal Research and Development Corp., Tallevast, Fla.

Filed Nov. 8, 1979, Ser. No. 92,578
Int. Cl.[3] C12M *1/02*
U.S. Cl. 435—292 3 Claims



1. An anaerobic digestion sub-system for a system for production of methane gas by anaerobic digestion of feed materials containing suitable organic materials, comprising:

(a) a plurality of anaerobic digestion modules, stacked and interfaced in a vertical array, each having a gas sampling

and discharge port having a three-way valve positioned therein and each having a digesting slurry sample port having a valve positioned therein;

(b) a plurality of sloped plates, each positioned between a pair of adjacent digestion modules to function as a bottom for the digestion module immediately above it and as a top for the digestion module immediately below it and each having an opening through its lowest point for transfer of digesting slurry from the digestion module immediately above it to the digestion module immediately below it;

(c) a plurality of valves, each operatively positioned for closing one of said openings through said plates during anaerobic digestion operations;

(d) means for independently operating each of said valves from the exterior of said anaerobic digestion modules;

(e) a top cover fastened to the top digestion module in said vertical array, said top cover having a slurry inlet port for transfer of freshly prepared slurry from a slurry preparation sub-system to said top digestion module;

(f) a bottom cover fastened to the bottom digestion module in said vertical array, said bottom cover having a slurry outlet port for transfer of digested slurry from said bottom digestion module to a sludge separation sub-system;

(g) a valve positioned in said slurry outlet port of said bottom digestion module for closing said slurry outlet port during anaerobic digestion operations;

(h) means for independently heating and controlling the temperature in the interior of each of said anaerobic digestion modules; and (i) a gas collection manifold for collecting gas from the gas sampling and discharge ports.

4,248,973

CAPILLARY TUBE INDICATOR FOR THE DETERMINATION OF UREA CONCENTRATIONS

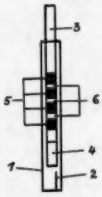
Karl-Heinz Kallies, Sebnitz, German Democratic Rep., assignor to Veb Arzneimittelwerk Dresden, Radebeul, German Democratic Rep.

Filed Dec. 22, 1978, Ser. No. 973,075

Claims priority, application German Democratic Rep., Apr. 11, 1977, 201873

Int. Cl.³ C12Q *1/58*; G01N *33/52, 33/62*

U.S. Cl. 435—296 **12 Claims**



1. A capillary tube indicator for the micro determination of urea concentrations comprising a capillary tube having a marking line near one end to indicate sample level; an indicator strip inserted within said capillary tube; a reaction system applied in a zone at one end of said indicator strip comprising a partially purified urease preparation and between substantially 1 and 15% of a saccharide or polysaccharide; and above said reaction system zone at least one indicator dye sensitive to alkali applied to said indicator strip in a plurality of zones for providing a visual indication of the urea concentration with untreated bands of the indicator strip separating said indicator zones and said reaction system zone from said first indicator zone.

4,248,974

BINDER COMPOSITION FOR FOUNDRY SAND CONTAINING ZINC CARBONATE DISPERSED IN RESIN

Shin Fujii, Zama; Koue Ohkawa, Yokohama, and Takashi Seino, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jun. 7, 1979, Ser. No. 46,308

Claims priority, application Japan, Jun. 15, 1978, 53-71445

Int. Cl.³ C12P *19/34*

U.S. Cl. 521—91 **4 Claims**

1. A foundry composition for forming molds and cores for use in a sand mold casting process, the foundry composition comprising:

100 parts by weight of a foundry sand; and

from about 1 to about 7 parts by weight of a binder composition which is in the form of coating on the individual particles of said foundry sand and comprises a thermosetting resin and powdery zinc carbonate dispersed in said resin, the proportion of said zinc carbonate to said resin being in the range from 0.5:100 to 30:100 by weight.

4,248,975

RIGID SHRINK STABLE POLYURETHANE FOAM DERIVED FROM AN ADDUCT OF AN ALKYLENE OXIDE HAVING AT LEAST THREE CARBON ATOMS AND A POLYOL HAVING AT LEAST FOUR HYDROXY GROUPS AND BLOWN WITH A FLUORINATED-CHLORINATED ALKANE

Kenneth P. Satterly, Kennett Square, Pa., assignor to Witco Chemical Corporation, New York, N.Y.

Continuation of Ser. No. 483,831, Jun. 27, 1974, abandoned, which is a continuation of Ser. No. 74,216, Sep. 21, 1970, Pat. No. 3,846,347, which is a continuation of Ser. No. 683,152, Nov. 15, 1967, abandoned, which is a continuation of Ser. No. 250,505, Jan. 10, 1963, abandoned, which is a continuation-in-part of Ser. No. 783,688, Dec. 30, 1958, abandoned. This application Mar. 22, 1978, Ser. No. 888,933

The portion of the term of this patent subsequent to Nov. 5, 1991, has been disclaimed.

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—110 **11 Claims**

1. A rigid shrink stable polyurethane foam having a K factor value of less than 0.22 and in which foam substantially all of the cells are closed, the closed cell content being at least 90 percent, the cells being fine uniform cells, and which foam is prepared from the reaction product of: (a) an arylene polyisocyanate and (b) an addition product of an alkylene oxide having at least three carbon atoms and a polyol having at least four hydroxy groups in the presence of a volatile blowing agent essentially consisting of a chlorofluoro-lower alkane.

4,248,976

FLAME-RESISTANT POLYMER COMPOSITIONS

Brian G. Clubley, Sale; Boyce I. D. Davis, Cheadle; Thomas G. Hyde, Sale; Frank Lamb, Bury, and Donald R. Randell, Stockport, all of England, assignors to Ciba-Geigy AG, Basel, Switzerland

Division of Ser. No. 774,564, Mar. 4, 1977, Pat. No. 4,172,858. This application Nov. 27, 1978, Ser. No. 965,248

Claims priority, application United Kingdom, Mar. 6, 1976, 9072/76; Aug. 7, 1976, 32980/76

Int. Cl.³ C08K *5/52*

U.S. Cl. 525—2 **27 Claims**

1. A composition which comprises a polymer selected from the group consisting of

(1) a homopolymer or copolymer of styrene or α-methyl styrene,

(2) a blend of (1) with polyphenylene oxide, polysulfone, vinyl chloride resin or polycarbonate,

(3) a styrene cured unsaturated polyester resin, and

(4) a polymer containing an aromatic group in the polymer

chain and selected from the group consisting of polycarbonates, polyphenylene ethers, polysulfides, polyurethanes, polyhydrazides, linear polyesters, polysulfonates, polyamides, polyimides, polybenzimidazoles and polyanhydrides,

and a flame-retarding combination of

(a) a phosphorus compound selected from the group consisting of a phosphine oxide, a phosphorous oxy acid, a salt of a phosphorous oxy acid and an ester of a phosphorous oxy acid, and

(b) a compound of the formula

$$R(CH_2X)_n$$

wherein

R represents a monocyclic aromatic hydrocarbon radical or a di- or polycyclic-aromatic hydrocarbon radical the rings of which are fused or are linked directly and wherein R is unsubstituted other than by (CH_2X) or is substituted by one or more groups selected from alkyl of 1 to 12 carbon atoms, cycloalkyl of 5 to 12 carbon atoms, hydroxyl, alkoxy of 1 to 12, alkoxy of 1 to 12 carbon atoms which contains an epoxide group, cycloalkoxy of 5 to 12 carbon atoms, aralkyloxy of 7 to 12 carbon atoms, acyloxy of 1 to 12 carbon atoms, carboxyl and carboalkoxy of 2 to 12 carbon atoms, n is an integer of 2 to 12, and X is OH.

4,248,977

COATING POWDERS WITH IMPROVED ADHESION

William E. Wertz, Reading, Pa., assignor to The Polymer Corporation, Reading, Pa.

Filed Nov. 7, 1978, Ser. No. 958,523

Int. Cl.³ C08L *63/00, 29/04*

U.S. Cl. 525—58 **5 Claims**

1. An adherent nylon coating powder comprising about 100 parts by weight of nylon melt mixed with 2 to 5 parts by weight of a reactive epoxy resin and 1 to 10 parts by weight of a polyvinyl acetal characterized in that the coating powder is free from a curing agent for the epoxy.

4,248,978

PULVERULENT COATING COMPOSITION

Eckhard de Cleur, Duisburg; Rolf Dhein, Krefeld; Hans Rudolph, Krefeld; Hans J. Kreuder, Krefeld; Hanns P. Müller, Leverkusen; Walter Schäfer, Cologne; Kuno Wagner, Leverkusen, and Kurt Findeisen, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 2, 1979, Ser. No. 35,220

Claims priority, application Fed. Rep. of Germany, May 5, 1978, 2819827

Int. Cl.³ C08L *75/00*

U.S. Cl. 525—124 **1 Claim**

1. Binders for pulverulent coating compositions consisting of:

(a) from 25 to 95%, by weight, preferably from 50 to 95%, by weight, of at least one monomer, oligomer or polymer containing hydroxyl, urethane, carboxyl, mercapto, amino, amide, urea or thiourea groups and having a glass transition temperature of from 40° to 200° C. (determined by differential thermoanalysis); and

(b) from 5 to 75%, by weight, preferably from 5 to 50%, by weight, of at least one blocked polyisocyanate having a melting point of from 40° to 220° C., preferably from 60° to 180° C.; the percentages of (a) and (b) adding up to 100; characterised in that the cross-linking agent (b) contains at least one uretone imine group per molecule.

4,248,979

INTERNALLY PLASTICIZED POLY(VINYL CHLORIDE) BLOCK COPOLYMERS

John J. Laverty, Sterling Heights, and Zachariah G. Gardlund, Utica, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 17, 1978, Ser. No. 878,714

Int. Cl.³ C08F *8/30;* **C08L** *75/06, 75/08*

U.S. Cl. 525—129 **5 Claims**

1. A method of making a thermoplastic block copolymer having alternating poly(vinyl chloride) segments and aliphatic polymer segments joined by urethane linkages comprising

forming isocyanate terminated poly(vinyl chloride) by chemically combining hydroxy group terminated poly(vinyl chloride), having an average molecular weight ($\overline{Mn}$) in the range of from about 1,000 to 5,000 with about twice the chemically equivalent amount of said hydroxy groups of a difunctional isocyanate having a molecular weight no greater than about 300, and then

forming a said block copolymer by chemically combining said isocyanate terminated poly(vinly chloride) with about the chemically equivalent amount of one or more linear hydroxyl terminated aliphatic polymer constituents taken from the group consisting of polyethers and polyesters, said aliphatic polymer constituents having an average molecular weight ($\overline{Mn}$) in the range of from about 1,000 to 5,000, said block copolymer having an average molecular weight ($\overline{Mn}$) in the range of from about 15,000 to 60,000 and being flexible without the addition of external plasticizer.

4,248,980

CLEAR IMPACT RESISTANT THERMOPLASTIC STAR-BLOCK COPOLYMERS

Le-Khac Bi, Pittsburgh, and Ralph Milkovich, Murrysville, both of Pa., assignors to ARCO Polymers, Inc., Philadelphia, Pa.

Filed Apr. 30, 1979, Ser. No. 34,113

Int. Cl.³ C08L *9/00, 47/00*

U.S. Cl. 525—271 **6 Claims**

1. Star-block copolymers, of from 60 to 90% by weight of a monovinyl aromatic compound and 40 to 10% by weight of a conjugated diene of 4 to 8 carbon atoms, which have an average structure of the general formula $(A—B/A'—B')_m X$ where A is a non-elastomeric polymer segment based on the monovinyl aromatic compound, B/A' is an elastomeric polymer segment based on a random copolymer of the monovinyl aromatic compound and the conjugated diene wherein the weight ratio of A' (the weight percent of monovinyl aromatic compound in the elastomeric polymer segment) to B (the weight percent of conjugated diene in the elastomeric polymer segment) must be less than 1.0, B' is an elastomeric polymer segment based on the conjugated diene, m is an integer between 3 and 20, and X is the radical of a polyfunctional coupling agent by means of which the linear polymer blocks (A—B/A'—B') are chemically bonded to form the star-block copolymers, wherein said segment A contains 80 to 95% by weight of the total monovinyl aromatic compound, segment B' contains 20 to 40% by weight of the total conjugated diene, and segment B/A' contains no significant blocks of either monovinyl aromatic compound or conjugated diene.

4,248,981

CLEAR IMPACT RESISTANT THERMOPLASTIC STAR-BLOCK COPOLYMERS

Ralph Milkovich; Kenneth Doak, both of Murrysville, and Le-Khac Bi, Pittsburgh, all of Pa., assignors to ARCO Polymers, Inc., Philadelphia, Pa.

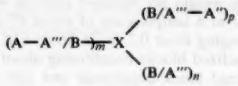
Filed Apr. 30, 1979, Ser. No. 34,115

Int. Cl.³ C08L *9/00, 47/00*

U.S. Cl. 525—271 **6 Claims**

1. Star-block copolymers, of from 60 to 90% by weight of a monovinyl aromatic compound and 40 to 10% by weight of a

conjugated diene of 4 to 8 carbon atoms, which have an average structure of the general formula,



where A and A'' are non-elastomeric polymer segments based on the monovinyl aromatic compound, B/A''' or A'''/B is an elastomeric polymer segment based on a random copolymer of the monovinyl aromatic compound and the conjugated diene wherein the weight ratio of A''' (the weight percent of monovinyl aromatic compound in the elastomeric polymer segment) to B (the weight percent of conjugated diene in the elastomeric polymer segment) must be less than 1.0, m, n and p are integers whose sum is between 3 and 20, and X is the radical of a polyfunctional coupling agent by means of which the linear polymer blocks (A-B/A'''-B'), (A''-B/A'''-B') and (B/A'''-B') are chemically bonded to form the star-block copolymers, wherein said segment A'' contains 10 to 45% by weight of the total monovinyl aromatic compound and the sum of segments A and A'' amounts to 80 to 95% by weight of the total monovinyl aromatic compound, and segment B/A''' contains no significant blocks of either monovinyl aromatic compound or conjugated diene.

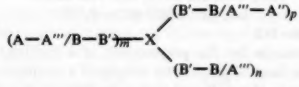
4,248,982

CLEAR IMPACT RESISTANT THERMOPLASTIC STAR-BLOCK COPOLYMERS

Le-Khac Bi, Pittsburgh, and Ralph Milkovich, Murrysville, both of Pa., assignors to Arco Polymers, Inc., Philadelphia, Pa.

Filed Apr. 30, 1979, Ser. No. 34,830
Int. Cl.[3] C08L *9/00, 47/00*
U.S. Cl. 525—271 **6 Claims**

1. Star-block copolymers, of from 60 to 90% by weight of a monovinyl aromatic compound and 40 to 10% by weight of a conjugated diene of 4 to 8 carbon atoms, which have an average structure of the general formula,



where A and A'' are non-elastomeric polymer segments based on the monovinyl aromatic compound, B/A''' or A'''/B is an elastomeric polymer segment based on a random copolymer of the monovinyl aromatic compound and the conjugated diene wherein the weight ratio of A''' (the weight percent of monovinyl aromatic compound in the elastomeric polymer segment) to B (the weight percent of conjugated diene in the elastomeric polymer segment) must be less than 1.0, B' is an elastomeric polymer segment based on the conjugated diene, m, n and p are integers whose sum is between 3 and 20, and X is the radical of a polyfunctional coupling agent by means of which the linear polymer blocks (A-B/A'''-B'), (A''-B/A'''-B') and (B/A'''-B') are chemically bonded to form the star-block copolymers, wherein said segment A'' contains 10 to 45% by weight of the total monovinyl aromatic compound and the sum of segments A and A'' amounts to 80 to 95% by weight of the total monovinyl aromatic compound, segment B' contains 20 to 40% by weight of the total conjugated diene, and segment B/A''' contains no significant blocks of either monovinyl aromatic compound or conjugated diene.

4,248,983

CLEAR IMPACT RESISTANT THERMOPLASTIC STAR-BLOCK COPOLYMERS

Le-Khac Bi, Pittsburgh; Ralph Milkovich, and Kenneth W. Doak, both of Murrysville, all of Pa., assignors to ARCO Polymers, Inc., Philadelphia, Pa.

Filed Feb. 5, 1979, Ser. No. 8,994
Int. Cl.[3] C08F *297/04*
U.S. Cl. 525—314 **5 Claims**

1. Star-block copolymers, of from 60 to 95% by weight of a monovinyl aromatic compound and 40 to 5% by weight of a conjugated diene of 4 to 8 carbon atoms, which have an average structure of the general formula $(A\text{-}B/A')_m X\text{-}(A'/B)_n$ where A is a non-elastomeric polymer segment based on the monovinyl aromatic compound and A'/B or B/A' is an elastomeric polymer segment based on a random copolymer of the monovinyl aromatic compound and the conjugated diene, m and n are integers whose sum is between 3 and 20, and X is the radical of a polyfunctional coupling agent by means of which the linear polymer blocks (A-B/A') and (B/A') are chemically bonded to form the star-block copolymers, wherein said segment A contains 80 to 90% by weight of the total monovinyl aromatic compound and segment B/A' contains no significant blocks of either monovinyl aromatic compound or conjugated diene.

4,248,984

CLEAR IMPACT RESISTANT THERMOPLASTIC STAR-BLOCK COPOLYMERS

Le-Khac Bi, Pittsburgh; Ralph Milkovich, and Kenneth W. Doak, both of Murrysville, all of Pa., assignors to ARCO Polymers, Inc., Philadelphia, Pa.

Continuation-in-part of Ser. No. 8,994, Feb. 5, 1979, abandoned. This application May 11, 1979, Ser. No. 38,150
Int. Cl.[3] C08F *297/04*
U.S. Cl. 525—314 **6 Claims**

1. Star-block copolymers, of from 60 to 90% by weight of a monovinyl aromatic compound and 40 to 10% by weight of a conjugated diene of 4 to 8 carbon atoms, which have an average structure of the general formula $(A\text{-}B/A')_m X\text{-}(A'/B)_n$ where A is a non-elastomeric polymer segment based on the monovinyl aromatic compound, A'/B or B/A' is an elastomeric polymer segment based on a random copolymer of the monovinyl aromatic compound and the conjugated diene wherein the weight ratio of A' (the weight percent of monovinyl aromatic compound in the elastomeric polymer segment) to B (the weight percent of conjugated diene in the elastomeric polymer segment) must be less than 1.0, m and n are integers whose sum is between 3 and 20, X is the radical of a polyfunctional coupling agent by means of which the linear polymer blocks (A-B/A') and (B/A') are chemically bonded to form the star-block copolymers, wherein said segment A contains 80 to 95% by weight of the total monovinyl aromatic compound and segment B/A' contains no significant blocks of either monovinyl aromatic compound or conjugated diene.

4,248,985

SULFUR-CURABLE ACRYLIC RUBBER COMPOSITION

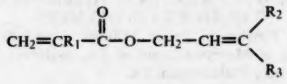
Tetsu Ohishi, Tokyo; Kohichi Handa, Kamakura, and Haruo Ueno, Tokyo, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Mar. 27, 1979, Ser. No. 24,475
Claims priority, application Japan, Mar. 28, 1978, 53-35886
Int. Cl.[3] C08F *8/00, 218/12*
U.S. Cl. 525—327 **10 Claims**

1. A sulfur-curable acrylic rubber composition comprising (I) 100 parts by weight of an acrylic rubber resulting from the copolymerization in the presence of a radical initiator of

(1) 30 to 89.5% by weight of at least one alkyl acrylate with the alkyl group containing 1 to 8 carbon atoms,

(2) 0.5 to 10% by weight of at least one monomer of the general formula



wherein R_1 represents a hydrogen atom or a methyl group, and R_2 and R_3, independently from each other, represent an alkyl group containing 1 to 3 carbon atoms,

(3) 10 to 60% by weight of at least one alkoxyalkyl acrylate with the alkoxy group containing 1 to 4 carbon atoms and the alkylene group containing 1 to 4 carbon atoms, and

(4) 0 to 30% by weight of at least one of monovinyl and monovinylidene unsaturated compounds other than the said compounds;

(II) 1 to 5 parts by weight of a metal compound usable as a vulcanization activator for rubber and selected from the group consisting of metal oxides, metal hydroxides, metal carbonates and organic carboxylic acid salts of metals; and

(III) 0.2 to 5 parts by weight, as sulfur, of at least one of sulfur and sulfur-containing organic compounds usable as vulcanizers and vulcanization accelerators and is a member selected from the group consisting of thiazole compounds, sulfenamide compounds, thiourea compounds, thiuram compounds, dithiocarbamate compounds, triazine compounds, morpholine disulfide and 4,4'-dithiomorpholine.

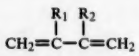
4,248,986

SELECTIVE CYCLIZATION OF BLOCK COPOLYMERS

Joginder Lal, Akron, and Richard R. Smith, Cuyahoga Falls, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

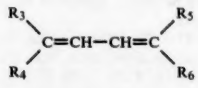
Filed Aug. 27, 1979, Ser. No. 69,962
Int. Cl.[3] C08F *8/48*
U.S. Cl. 525—359 **22 Claims**

1. A process for selectively cyclizing block copolymers having a number average molecular weight of from about 10,000 to about 300,000 which comprises reacting 1 to 30 percent by weight solution of a block copolymer comprised of at least two different blocks, at least one of which blocks is a cyclizable block derived from a conjugated diene monomer of the general structure



wherein: R_1 is selected from a hydrocarbyl group containing one to twelve carbon atoms, R_2 is selected from hydrogen or a hydrocarbyl group containing one to twelve carbon atoms; and at least one of which blocks is a non-cyclizable block derived from at least one member selected from the following classes of compounds:

(a) polymers of conjugated diene monomers of general structure



wherein: R_3, R_4 and R_5 are the same or different and are selected from hydrogen or a hydrocarbyl group containing one to twelve carbon atoms; R_6 is selected from hydrogen, a hydrocarbyl group containing one to twelve carbon atoms or a cyano group,

(b) polymers of α-methylstyrene, styrene, alkyl or aryl substituted styrenes or halogen substituted styrenes,

(c) polymethacrylonitrile, polycaprolactam, polycaprolactone or polydimethylsiloxane,

with a cationic catalyst at concentrations from about 0.1 to about 20 parts by weight per hundred parts by weight of said block copolymer at a temperature of about 0°–200° C. for a reaction time ranging from 0.2 to 25 hours and stopping the reaction, said cyclized blocks constituting about 5–95 weight percent of cyclized block copolymer and said non-cyclized blocks constituting about 95–5 weight percent of cyclized block copolymer.

4,248,987

PROCESS FOR VULCANIZING RUBBER AT A LOW TEMPERATURE

Isamu Maeda, and Masashi Aoshima, both of Ichihara, Japan, assignors to Sumitomo Chemical Company, Limited, Tokyo, Japan

Division of Ser. No. 814,918, Jul. 12, 1977, Pat. No. 4,166,892, which is a continuation of Ser. No. 655,547, Feb. 5, 1976, abandoned, which is a continuation of Ser. No. 429,588, Jan. 2, 1974, abandoned. This application Apr. 26, 1979, Ser. No. 33,696
Claims priority, application Japan, Jan. 12, 1973, 48-6805
Int. Cl.[3] C08L *15/02*
U.S. Cl. 525—366 **9 Claims**

1. A process for vulcanizing a non-aqueous rubber base comprising chloroprene rubber, said process comprising

vulcanizing said non-aqueous rubber base at a temperature ranging from 5° to 85° C. in the presence of

0.01 to 20 parts by weight of at least one vulcanizing agent selected from the group consisting of an organic hydroperoxide and ketone peroxide per 100 parts by weight of said rubber, and

0.01 to 20 parts by weight of at least one vulcanization activator or accelerator selected from the group consisting of (1) aliphatic or cycloaliphatic carboxylic acid salts of zinc, lead, chromium, cobalt, nickel, magnesium, manganese, copper, and iron; (2) methacrylates; (3) maleimides; and (4) oximes per 100 parts by weight of said rubber base.

4,248,988

PROCESS FOR THE PREPARATION OF CYCLIZED POLYMERIC DIENES

Adel F. Halasa, Bath, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Oct. 18, 1979, Ser. No. 85,847
Int. Cl.[3] C08F *4/26, 4/80*
U.S. Cl. 526—141 **32 Claims**

1. The process for the preparation of a cyclized polymer containing at least 50 percent by weight of a conjugated hydrocarbon diene in the polymer molecule thereof and at least 80 percent of said diene being in a cyclized form which comprises polymerizing at a temperature of 5°–50° C. a liquid monomeric composition containing at least 50 percent by weight of said diene as the monomeric portion thereof in the presence of a catalyst composition consisting essentially of:

(a) a cobalt-containing or nickel-containing component selected from the class consisting of halides, carboxylates, thiocarboxylates, carbonate, thiocarbonate and complexes of said halides, carboxylates, thiocarboxylates, carbonate and thiocarbonate, said complex being formed between the cobalt or nickel and a nitrogen, keto or thioketo group in the same compound or with a separate cyclic compound having both a nitrogen and keto or thioketo group therein, said component being used in a proportion of 0.01–1 millimoles per 100 grams of conjugated diene;

(b) a reducing agent selected from the class consisting of AlR_3, AlR_2X, $AlRX_2$ and AlR_2H wherein R is a hydrocarbon radical of 1–8 carbon atoms, and X is halogen, said agent being used in a proportion of 10–500 moles per mole of cobalt or nickel containing component; and

(c) A halogenated hydrocarbon containing 1–10 carbon

atoms and 1–6 halogen atoms per molecule with at least one of said halogen atoms being attached to an aliphatic carbon atom in said halogenated hydrocarbon, said halogenated hydrocarbon being used in a proportion of 50–5000 moles per mole of said cobalt-containing or nickel-containing component.

4,248,989

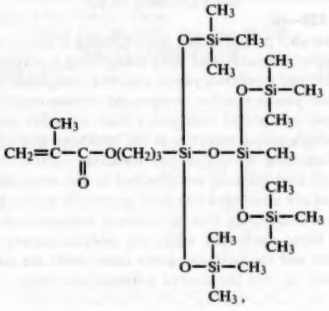
OXYGEN PERMEABLE HARD AND SEMI-HARD CONTACT LENS COMPOSITIONS, METHODS AND ARTICLES OF MANUFACTURE II

Nick N. Novicky, 250 Old Oak Dr., #272, Buffalo Grove, Ill. 60090

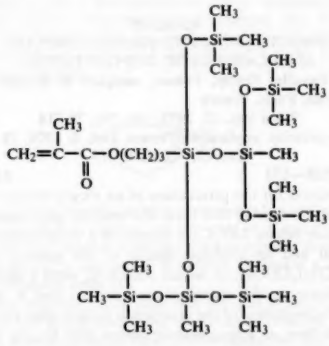
Filed Sep. 11, 1979, Ser. No. 74,427
Int. Cl.[3] C08F *220/28;* G02C *7/04*
U.S. Cl. 526—264 **2 Claims**

1. An oxygen permeable hard or semi-hard, machinable, dimensionally stable, wettable contact lens material of high transparency consisting essentially of polymer formed by free radical polymerization of

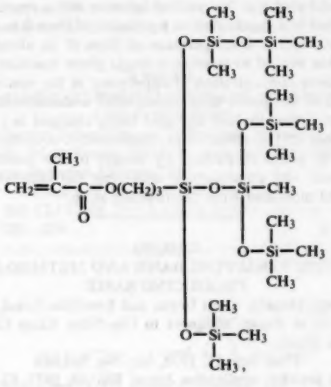
(a) 15 to 60% by weight of at least one monomer selected from the group consisting of bis(trimethylsiloxy)methylsiloxanyl bis(trimethylsiloxy)methacryloxypropylsilane having the following formula



bis[bis(trimethylsiloxy)methylsiloxanyl]trimethylsiloxymethacryloxypropylsilane having the following formula



and bis(trimethylsiloxy)methylsiloxanylmonopentamethyldisiloxanylmonotrimethylsiloxanylmethacryloxypropylsilane having the following formula



(b) 40 to 85% by weight of at least one acrylic or methacrylic acid ester comonomer selected from the group consisting of methyl acrylate, methyl methacrylate, ethyl acrylate, ethyl methacrylate, propyl acrylate, propyl methacrylate, isopropyl acrylate, isopropyl methacrylate, 2-ethylhexyl acrylate, 2-ethylhexyl methacrylate, cyclohexyl acrylate, cyclohexyl methacrylate, benzyl acrylate, benzyl methacrylate, phenyl acrylate, phenyl methacrylate, 3-hydroxy 2-naphtyl methacrylate, and mixtures thereof,

(c) 10 to 30% by weight of at least one itaconic acid ester comonomer selected from the group consisting of dimethyl itaconate, diphenyl itaconate and dihexyl itaconate,

(d) 1 to 20% by weight of at least one hydrophilic comonomer selected from the group consisting of n-vinyl 2-pyrrolidine, methacrylic acid and acrylic acid, and

(e) 1 to 10% by weight of at least one cross-linking comonomer selected from the group consisting of ethyleneglycoldimethacrylate, diethyleneglycoldimethacrylate, triethyleneglycoldimethacrylate, tetraethyleneglycoldimethacrylate, polyethyleneglycoldimethacrylate, divinyl benzene, and tetramethyldisiloxanyldi(methylmethacrylate), said % by weight of (a), (b), (c), (d) and (e) being % by weight based on the total weight of (a), (b), (c), (d) and (e).

4,248,990

NONRANDOM COPOLYMERS OF ETHYLENE AND UNSATURATED ACID

Edwin T. Pieski, Fairfax, and Thomas F. Sashihara, Wilmington, both of Del., assignors to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Filed Apr. 5, 1979, Ser. No. 27,455
Int. Cl.[3] C08F *2/02, 8/44, 220/06, 222/02*
U.S. Cl. 526—317 **18 Claims**

1. A compositionally uniform but nonrandom copolymer of ethylene and α,β-ethylenically unsaturated carboxylic acid, said acid having from 3 to 8 carbon atoms and said copolymer containing on a weight basis from about 6 to about 35 percent acid, having a melt index of from about 0.1 to about 800, and having a ratio of weight percent adjacent acid to weight percent acid in the copolymer of from about 0.44 to about 1.0.

11. A process of preparing in a constant environment stirred autoclave a compositionally uniform but nonrandom copolymer of ethylene and an α,β-ethylenically unsaturated carboxylic acid, said acid having from 3 to 8 carbon atoms and said copolymer containing, on a weight basis, from about 6 to about 35 percent acid, having a melt index of from about 0.1 to about 800, and having a ratio of weight percent adjacent acid to weight percent acid in the copolymer of from about 0.44 to

about 1.0, said process comprising continuously charging ethylene, said acid and free radical initiator into a reaction zone maintained in a steady state at a pressure of from 0 to about 50 psi above, and at a temperature of from 0° to about 15° C. above that needed to maintain a single phase reaction mixture at the given concentration of copolymer in the reaction mixture and at the given acid comonomer concentration in the copolymer, the ethylene and acid being charged in a ratio of from about 15:1 to about 200:1, respectively, converting from about 5 to about 20 percent by weight of the monomers to copolymer, and continuously removing the copolymer and unreacted monomer from the reaction zone.

4,248,991

ELASTIC STRAPPING BAND AND METHOD FOR PRODUCING SAME

Youji Negi, Oogaki; Kouji Iwata, and Kazuhiko Sakai, both of Gifu, all of Japan, assignors to Ube-Nitto Kasei Co., Ltd., Tokyo, Japan

Filed Sep. 11, 1978, Ser. No. 940,889
Claims priority, application Japan, Sep. 10, 1977, 52/108347
Int. Cl.³ C08F *210/02, 218/08*
U.S. Cl. 526—331 **2 Claims**

1. An elastic strapping band produced by extruding molten ethylene-vinyl acetate copolymer containing vinyl acetate in a range of 3 to 20 wt% into a band-shape, cooling and then subjecting the band-shaped copolymer to an elongation in a multiplication range of 2.5 to 6 times the initial length thereof, wherein said band has molecular orientation in the lengthwise direction thereof with a double refraction rate, Δn, being in the range of 24×10^{-3} to 38×10^{-3}, whereby said band has a tensile strength higher than 3.3 kg/mm^2, and an elasticity recovering rate higher than 70%.

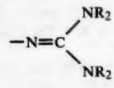
4,248,992

GAUNIDYL-CONTAINING ORGANOSILICON COMPOUNDS

Toshio Takago, Annaka, Japan, assignor to Shin-Etsu Chemical Co. Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 63,172, Aug. 3, 1979, abandoned, which is a continuation of Ser. No. 917,660, Jun. 21, 1978, Pat. No. 4,180,642. This application Sep. 20, 1979, Ser. No. 77,195
Claims priority, application Japan, Jun. 29, 1977, 52-77590
Int. Cl.³ C08G *77/04*
U.S. Cl. 528—28 **4 Claims**

1. A shaped article of a rubber or plastic comprising from 0.05 to 3% by weight of an organosilicon compound having in a molecule at least one monovalent guanidyl group represented by the general formula



wherein R is a hydrogen atom or monovalent hydrocarbon group, said guanidyl group being bonded to the silicon atom of the organosilicon compound by a divalent hydrocarbon group.

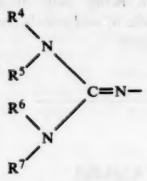
4,248,993

ROOM TEMPERATURE CURABLE ORGANOPOLYSILOXANE

Toshio Takago, Annaka, Japan, assignor to Shin-Etsu Chemical Co. Ltd., Tokyo, Japan

Continuation of Ser. No. 917,660, Jun. 21, 1978, Pat. No. 4,180,642. This application Aug. 3, 1979, Ser. No. 63,172
Claims priority, application Japan, Jun. 29, 1977, 52-77590
Int. Cl.³ C08G *77/26*
U.S. Cl. 528—38 **5 Claims**

1. An organosilane or an organopolysiloxane having in a molecule at least one monovalent group represented by the general formula



(I)

wherein R^4, R^5, R^6 and R^7 are each a hydrogen atom or a monovalent hydrocarbon group and the group represented by formula (I) is bonded to the silicon atom by a divalent group.

4,248,994

POLYURETHANE COMPOSITIONS DERIVED FROM POLYOLS CONTAINING A CONTROLLED DISTRIBUTION OF CARBOXAMIDE GROUPS

William H. Cook, Bloomfield Hills, Mich., assignor to Fabridyne, Inc., Bloomfield Hills, Mich.

Filed Jun. 14, 1979, Ser. No. 48,395
Int. Cl.³ C08G *18/32*
U.S. Cl. 528—60 **16 Claims**

1. A one-shot polyurethane resin-forming system for preparing a finished polyurethane body comprising a polyisocyanate component and a polyisocyanate reactive component in which the polyisocyanate reactive component consists essentially of a polyol resin or a polyol resin plus a chain extender, each molecule of which polyol resin has in the backbone thereof at least one carboxamide group of the formula —[NHC═O]— in which both free valences are attached to non-aromatic carbon atoms, and not more than one such group per hydroxyl group, said polyol resin being free of urethane linkages and the proportions being such that when the polyisocyanate reactive component and the polyisocyanate component are mixed, the mixture sets up into the desired polyurethane body.

4,248,995

PROCESS FOR THE PRODUCTION OF ALKYLAROMATIC COPOLYESTERS

Bernard Fayolle, Ecully, France, assignor to Rhone-Poulenc Industries, Paris, France

Filed Sep. 25, 1979, Ser. No. 78,714
Claims priority, application France, Oct. 5, 1978, 78 28948
Int. Cl.³ C08G *63/18*
U.S. Cl. 528—171 **11 Claims**

1. A process for the production of an alkylaromatic copolyester, characterized in that there are reacted, successively, at a temperature below 250° C., a diester of a dihydroxyaromatic compound and an aliphatic diacid of the general formula $HOOC(CH_2)_nCOOH$, in which $3\leqq n\leqq 10$, with a molar ratio of the diester to the diacid of between 1.5 and 4, until the degree of completion of the reaction is greater than or equal to 85%, and then, at a temperature above 250° C., an aromatic and/or cycloaliphatic dicarboxylic acid, and in that the product obtained is subjected to a polycondensation reaction under reduced pressure for a duration which is less than or equal to 1 hour 30 minutes.

4,248,996
PREPARATION OF LINEAR HIGH MOLECULAR WEIGHT SATURATED POLYESTERS

Hans-Josef Sterzel, Dannstadt-Schauernheim; Franz Schmidt, Mannheim, and Hans Pirzer, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Feb. 28, 1979, Ser. No. 15,785

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1978, 2813161

Int. Cl.[3] **C08G** *63/22*

U.S. Cl. 528—272 **6 Claims**

1. A process for the preparation of high molecular weight linear saturated polyesters derived from dicarboxylic acids or their ester-forming derivatives and aliphatic and/or cycloaliphatic diols, comprising the condensation of polyester precondensates having a relative vicosity of from 1.05 to 1.15 at from 220° to 280° C. under reduced pressure, wherein

(a) the condensation is first started with from 70 to 90 percent by weight of the polyester precondensate and

(b) after from 10 to 50% of the total condensation time the remaining 5 to 30 percent by weight of the polyester precondensate are added to the polyester melt undergoing condensation in accordance with (a), and the condensation is taken to completion.

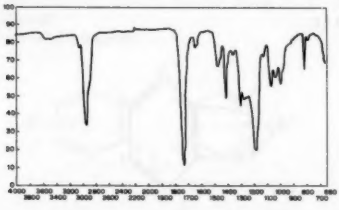
4,248,997
PROCESS FOR PRODUCING CURABLE ESTERIFIED ALKYD RESINS

Kazuyoshi Ihida, Tokyo, Japan, assignor to Toyo Ink Manufacturing Co., Ltd., Tokyo, Japan

Filed Jul. 30, 1979, Ser. No. 61,576

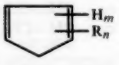
Int. Cl.[3] **C08F** *222/04*

U.S. Cl. 528—272 **21 Claims**



1. A process for the production of a final curable resin comprising the steps of:

reacting (A) at least one compound selected from the group consisting of a five-membered cyclic compound and a Diels-Alder's reaction product thereof, the five-membered cyclic compound having unsaturated conjugated double bonds and being represented by the following general formula



wherein R is an organic residue containing 1–3 carbon atoms, m and n are each an integer and the total of m and n is 6, with (B) at least one compound having a polymerizable double bond and a hydroxyl group in the molecule, to obtain a hydroxyl group-containing resin (I),

reacting together (1) at least one resin as a polyol selected from the group consisting of the thus obtained resin (I) and a hydrogenated resin (II) obtained by the selective hydrogenation of only the double bonds of the resin (I), (2) a polyol other than said resins (I) and (II), and (3) a polybasic acid to obtain a hydroxyl group-containing alkyd resin (III), and then

esterifying the thus obtained hydroxyl group-containing alkyd resin (III) with at least one α,β-unsaturated carboxylic acid to obtain the final curable resin (IV).

4,248,998
2,3-DI-(CARBOXYPHENYL)OXIRANE COMPOUNDS AND POLYMERS

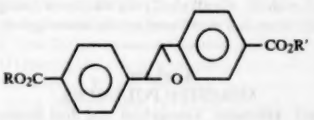
Carl A. Udovich, Joliet; Edward E. Paschke, Wheaton, and Ellis K. Fields, River Forest, all of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Aug. 20, 1979, Ser. No. 67,675

Int. Cl.[3] **C08K** *59/42;* **C07D** *303/16, 303/14*

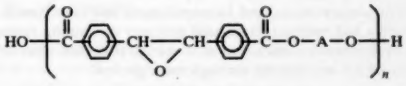
U.S. Cl. 528—296 **24 Claims**

1. A 2,3-di-(carboxyphenyl) oxirane compound of the structural formula



wherein R and R′ are individually selected from the group consisting of hydrogen, alkyl, aryl and alkaryl moieties wherein the alkyl moieties contain from 1 to 24 carbon atoms and the aryl moieties contain from 6 to 24 carbon atoms.

13. A resinous polymer comprising recurring units of an acyl compound wherein said acyl compound comprises a polyacyl radical of a 2,3-di-(carboxyphenyl) oxirane of the structural formula



wherein n comprises a whole number from 1 to 8000 inclusive, A is selected from the group consisting of divalent aliphatic moieties, divalent arene moieties and divalent cycloalkyl moieties.

4,248,999
5-FLUOROURACIL DERIVATIVES AND PROCESS FOR PREPARING THEREOF

Tsuneo Baba, Fukuoka; Masakatsu Kaneko, Hiromachi; Bunji Shimizu, Hiromachi, and Masao Arakawa, Hiromachi, all of Japan, assignors to Sankyo Company Limited, Tokyo, Japan

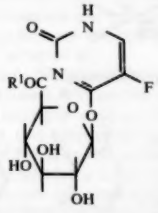
Filed Oct. 31, 1977, Ser. No. 847,452

Claims priority, application Japan, Oct. 28, 1976, 51-130200; Apr. 15, 1977, 52-43214; May 20, 1977, 52-58492; Sep. 13, 1977, 52-110370; Sep. 14, 1977, 52-110867

Int. Cl.[3] **C07H** *17/02;* **A61K** *31/70*

U.S. Cl. 536—4 **18 Claims**

1. A 5-Flourouracil compound having the formula



wherein R^1 represents a hydroxyl group, a C_1–C_8 alkoxy group, a C_5–C_7 cycloalkoxy group, a phenylalkyloxy having

1–2 carbon atoms in the alkyl moiety and the phenyl ring may be substituted with C_1–C_4 alkyl, C_1–C_4 alkoxy or halogen group, a phenyloxy group optionally substituted with C_1–C_4 alkyl, C_1–C_4 alkoxy or halogen or a group

in which R^2 and R^3 may be the same or different and each represents a hydrogen atom, a C_1–C_5 alkyl group, a C_5–C_7 cycloalkyl group, phenylalkyl having 1–2 carbon atoms in the alkyl moiety and the phenyl ring may be substituted with C_1–C_4 alkyl, C_1–C_4 alkoxy or halogen; phenyl, and phenyl substituted with C_1–C_4 alkyl, C_1–C_4 alkoxy or halogen or R^2 and R^3 may form 5–6 membered cyclic amino group.

4,249,000

MODIFIED POLYMERS

Hans Batzer, Arlesheim, Switzerland, and Joel Sinnreich, Bensheim, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 21, 1979, Ser. No. 13,501

Claims priority, application Switzerland, Feb. 21, 1978, 1847/78

Int. Cl.[3] **C08B** *3/06, 3/22, 11/20;* **C08J** *7/14*

U.S. Cl. 536—66 **15 Claims**

1. A polymer selected from the group consisting of cellulose ester and cellulose ether derivatives, polyvinyl alcohol and ester derivatives thereof, copolymers of polyvinyl alcohol and vinyl esters, copolymers of vinyl esters with one or more α-olefin comonomers, and homopolymers and copolymers of acrylates and methacrylates, said polymer containing radicals of a cyclic monofunctional or difunctional β-ketonic acid or its esters which are bonded through ester groups.

4,249,001

PROSTANOIC ERGOLIN-8-YL ESTERS, THIOESTERS, AND AMIDES

Roland Wenger, Riehen, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 773,663, Mar. 2, 1977, abandoned. This application Jul. 9, 1979, Ser. No. 55,802

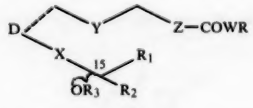
Claims priority, application Switzerland, Apr. 27, 1976, 5268/76; Feb. 18, 1977, 2059/77

Int. Cl.[3] **C09B** *23/00;* **C07D** *457/00*

U.S. Cl. 542—404 **27 Claims**

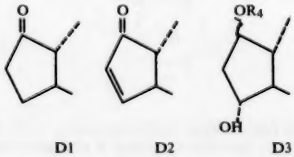
1. A prostanoic ergolin-8-yl ester, -thioester and amide in free form or in pharmaceutically acceptably acid addition salt form.

2. A compound of claim 1 having the formula I,



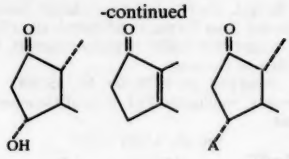
I

wherein D is a group of formula

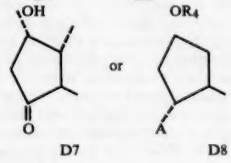


D1 D2 D3

-continued



D4 D5 D6

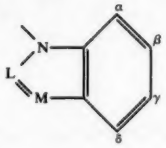


D7 D8

wherein A is a radical of formula (a),

a

wherein 1 to 3 of the four methine groups marked α, β, γ and δ are replaced by nitrogen, or a radical of formula (b),



b

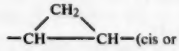
wherein either one of the ring members L and M is nitrogen and the other of the ring members L and M is methine, or each of L and M is nitrogen, 1 to 3 of the methine groups marked α, β, γ and δ may be replaced by nitrogen, and the six-membered ring is unsubstituted or mono-substituted by halogen, alkylamino, dialkylamino, alkoxy or alkylthio, each alkyl moiety of the last four radicals being independently of 1 to 5 carbon atoms,

W is oxygen, sulphur or imino,

X is $-CH_2-CH_2-$ or $-CH=CH-$(trans),

Y is $-CH_2-CH_2-$ or $-CH=CH-$(cis or trans),

Z is $-CH_2-CH_2-$ or

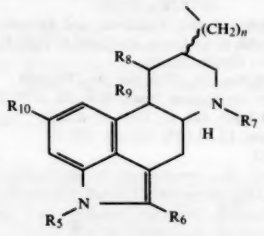


R_1 is alkyl of 1 to 10 carbon atoms or cycloalkyl of 3 to 9 carbon atoms,

R_2 is hydrogen or alkyl of 1 to 7 carbon atoms,

R_3 and R_4 are, independently, hydrogen, alkanoyl of 1 to 20 carbon atoms, or benzoyl, and

R is an ergolinylalkyl radical of formula II,



II

wherein
n is 1 or 2,
R_5 is hydrogen, alkyl of 1 to 4 carbon atoms, or benzyl,
R_6 and R_{10} are, independently, hydrogen or halogen,
R_7 is alkyl of 1 to 4 carbon atoms other than tert.butyl, and
(i) each of R_8 and R_9 is hydrogen, or
(ii) R_8 and R_9 together form a bond, or
(iii) R_8 is hydrogen, and
R_9 is alkoxy of 1 to 4 carbon atoms.

4,249,002

POLYCYCLIC AMINES AND INTERMEDIATES THEREFOR

Edgar Eriksoo, Helsingborg, Sweden, assignor to Aktiebolaget Leo, Helsingborg, Sweden

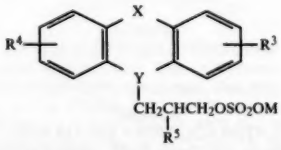
Division of Ser. No. 703,534, Jul. 8, 1976, abandoned. This application Jun. 22, 1978, Ser. No. 917,923

Claims priority, application United Kingdom, Jul. 10, 1975, 29161/75

Int. Cl.[3] **C07D** *279/22, 223/28, 141/02;* **A61K** *31/55, 31/38*

U.S. Cl. 544—38 **13 Claims**

1. Product of the formula



wherein X is selected from the group consisting of CH_2CH_2, CH=CH and S,
wherein Y is N or CH,
wherein R^3 and R^4 are the same or different, and are selected from the group consisting of H, F, Cl, CF_3, CN, $SO_2N(CH_3)_2$, SO_2CF_3, and lower alkyl, lower alkanoyl, and lower alkoxy, containing at most four carbon atoms,
wherein R^5 is H or methyl, and M is an alkali or alkalineearth metal cation.

4,249,003

PROCESS FOR POLYCYCLIC AMINES

Edgar Eriksoo, Helsingborg, Sweden, assignor to Aktiebolaget Leo, Helsingborg, Sweden

Continuation of Ser. No. 703,534, Jul. 8, 1976, abandoned. This application Jun. 22, 1978, Ser. No. 917,924

Claims priority, application United Kingdom, Jul. 10, 1975, 29161/75

Int. Cl.[3] **C07D** *279/22, 223/28, 141/02*

U.S. Cl. 544—38 **38 Claims**

1. Process for the production of a polycyclic amine of the formula

$$R^1—A^1—R^2$$

wherein R^1 is the radical of a tricyclic fused ring compound having the formula R^1H, and having two benzene rings and a central ring having a >CH— or >N— group as a part of that ring only, said central ring joining both benzene rings and not exceeding seven members total in that central ring said tricyclic ring compound having at least twelve and not more than twenty carbon atoms, inclusive of substituents, any substituents being selected from the group consisting of C_{1-4}lower-alkyl, C_{1-4}lower-alkoxy, C_{1-4}lower-alkanoyl, halogen, CF_3, OCH_3, $CN,SO_2N(CH_3)_2$, and SO_2CF_3, and having not more than two ring-heteroatoms selected from the group consisting of O, S and N; wherein A^1 is selected from the group consisting of trimethylene, 2-methyltrimethylene, and tetramethylene, which is attached to the ring-nitrogen or ring-carbon of said group >N— or >CH— of R^1, and wherein R^2 is amino ($—NH_2$) or the amino radical R^2 of an amine having the formula R^2H having a maximum of ten carbon atoms, and having in addition to said amino-nitrogen atom at most two heteroatoms selected from the group consisting of N and O, comprising the steps of (1) mixing and reacting together a compound of the formula R^1M, wherein R^1 has the value previously assigned and M is a cation selected from the group consisting of alkali metal ions and $MgHal^+$, where Hal is a halogen atom having an atomic weight greater than twenty, and a cyclic sulphate of the formula

to produce a compound of the formula

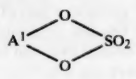
$$R^1—A^1—OSO_2OM$$

said reaction being carried out in the presence of a solvent which is non-reactive with the reactants and reaction products under conditions of the reaction, and (2) mixing and reacting the product thus produced with the amine R^2H, wherein R^2 has the value previously assigned, to produce the desired polycyclic amine, said reaction also being carried out in the presence of a solvent which is non-reactive with the reactants and reaction products under conditions of the reaction.

24. Process for the production of a polycyclic amine of the formula

$$R^1—A^1—R^2$$

wherein R^1 is the radical of a tricyclic fused ring compound having the formula R^1H and, said ring compound having at least twelve and not more than twenty carbon atoms, inclusive of substituents, any substituents being selected from the group consisting of C_{1-4}lower-alkyl, C_{1-4}lower-alkoxy, C_{1-4}lower-alkanoyl, F, Cl, CF_3, OCH_3, $CN,SO_2N(CH_3)_2$, and SO_2CF_3, R^1 having a ring system selected from the group consisting of phenothiazine, 10,11-dihydro-5H-dibenz(b,f)azepine, 5H-dibenz(bf)azepine, and 5H-dibenzo(a,d)cycloheptene;
wherein A^1 is selected from the group consisting of trimethylene, 2-methyltrimethylene and tetramethylene, which is attached to the ring-nitrogen or ring-carbon atom of the >N— or >CH— group of R^1;
wherein R^2 is amino ($—NH_2$) or the amino radical of an amine having the formula R^2H and having a maximum of ten carbon atoms, having in addition to said amino-nitrogen atom at most two heteroatoms selected from the group consisting of N and O, comprising the steps of (1) mixing and reacting together a compound of the formula R^1M, wherein R^1 has the value previously assigned and M is a cation selected from the group consisting of alkali metal ions and $MgHal^+$, where Hal is a halogen atom having an atomic weight greater than twenty, and a cyclic sulphate of the formula



to produce a compound of the formula

$$R^1—A^1—OSO_2OM,$$

said reaction being carried out in the presence of a solvent which is non-reactive with the reactants and reaction products under conditions of the reaction, and (2) mixing and reacting the product thus produced with R^2H, wherein R^2 has the value previously assigned, and wherein R^2H is selected from the group consisting of lower-alkyl amines and lower-dialkyl amines and amines wherein the amine-nitrogen atom forms a part of a monocyclic heterocyclic ring, to produce the desired polycyclic amine, said reaction also being carried out in the presence of a solvent which is non-reactive with the reactants and reaction products under conditions of the reaction.

4,249,004

SALT OF 1,3,6-TRIS(4,6-DIAMINO-1,3,5-TRIAZIN-2-YL)-HEXANE AND CYANURIC ACID

Masazumi Chono; Kunio Maeda, both of Yokohama, and Kunio Saito, Chigasaki, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 936,044, Aug. 23, 1978. This application Dec. 18, 1979, Ser. No. 104,822

Claims priority, application Japan, Aug. 30, 1977, 52-103154; Aug. 30, 1977, 52-103155

Int. Cl.³ C07D *403/14*

U.S. Cl. 544—192 **1 Claim**

1. A salt of 1,3,6-tris(4,6-diamino-1,3,5-triazin-2-yl)-hexane and cyanuric acid.

4,249,005

ALKOXYMETHYL AND BENZYLOXYMETHYL PHENOBARBITAL COMPOUNDS

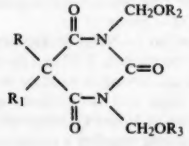
Carlos M. Samour, Wellesley, Mass., and Julius A. Vida, New York, N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Continuation-in-part of Ser. No. 749,972, Aug. 5, 1968, abandoned. This application Dec. 29, 1969, Ser. No. 888,943

Int. Cl.³ C07D *239/62*

U.S. Cl. 544—302 **5 Claims**

1. A compound having the structure



wherein R and R_1 are individually alkyl or alkenyl each having 2 to 5 carbon atoms or cycloalkenyl having 5 to 7 carbon atoms, and wherein R_2 and R_3 are individually alkyl having 1 to 12 carbon atoms or benzyl.

4,249,006

METHOD OF PRODUCING 5-FLUOROURACIL DERIVATIVES

Isao Minami, Suita; Yoshio Yoshioka, and Hiroaki Nomura, both of Takatsuki, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japana

Filed Nov. 24, 1976, Ser. No. 744,929

Claims priority, application Japan, Nov. 28, 1975, 50-142717; Jan. 19, 1976, 51-5260; Jul. 13, 1976, 51-83863

Int. Cl.³ C07D *405/04, 405/14*

U.S. Cl. 544—313 **23 Claims**

1. A method for producing 1-(tetrahydro-2-furyl)-5-fluorouracil, 1,3-bis-(tetrahydro-2-furyl)-5-fluorouracil or a mixture thereof which comprises heating a reaction mixture comprising 5-fluorouracil and 2,3-dihydrofuran, in a closed vessel.

19. A method for producing 1-(tetrahydro-2-furyl)-5-fluorouracil comprising hydrolyzing 1,3-bis-(tetrahydro-2-furyl)-5-fluorouracil with water or aqueous alcohol under neutral conditions.

4,249,007

ANTHRAQUINONE COLORANTS

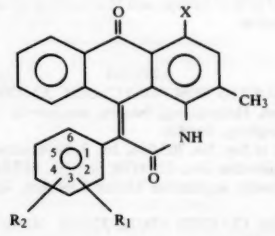
Leonard A. Bunes, San Carlos, Calif., assignor to Dynapol, Palo Alto, Calif.

Division of Ser. No. 751,857, Dec. 17, 1976, Pat. No. 4,182,885. This application May 2, 1979, Ser. No. 35,163

Int. Cl.³ C07D *221/18*

U.S. Cl. 546—58 **11 Claims**

1. A compound of the formula



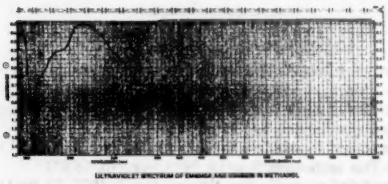
wherein R_1 and R_2 are independently selected from the group of hydrogen, halos of atomic number 9 through 53 inclusive, lower alkyls and lower alkoxies of from 1 to 3 carbon atoms, nitros, and sulfonates and wherein X is a halo of atomic number 17 through 53 inclusive.

4,249,008

3,4-DIHYDRO-4-HYDROXY-5-(3-HYDROXY-2-PYRIDINYL)-4-METHYL-2H-PYRROLE-2-CARBOXAMIDE

Richard B. Sykes, Rocky Hill; Jerry S. Wells, Ringoes, and Wen-Chih Liu, Princeton Junction, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Aug. 27, 1979, Ser. No. 70,287
Int. Cl.³ C07D *401/04*
U.S. Cl. 546—281 **3 Claims**



1. 3,4-dihydro-4-hydroxy-5-(3-hydroxy-2-pyridinyl)-4-methyl-2H-pyrrole-2-carboxamide.

4,249,009

PROCESSES FOR PREPARING 2-CHLORO-5-TRIFLUOROMETHYLPYRIDINE

Thomas D. Bailey, Indianapolis, Ind., assignor to Reilly Tar & Chemical Corp., Indianapolis, Ind.

Filed Jan. 29, 1979, Ser. No. 7,632
Int. Cl.³ C07D *213/26*
U.S. Cl. 546—345 **28 Claims**

1. A process for preparing 2-chloro-5-trifluoromethylpyridine comprising the step of reacting an amount of 5-carboxy-2-pyridone directly with both a suitable chlorinating agent and a suitable fluorinating agent to selectively transform both the 2-position oxygen function of the ring and the 5-carboxy group, respectively.

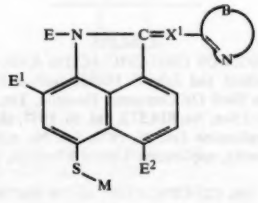
4,249,010

NAPHTHOSTYRIL DYESTUFFS

Horst Harnisch, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 876,542, Feb. 9, 1978, abandoned, which is a division of Ser. No. 772,324, Feb. 25, 1977, Pat. No. 4,201,713. This application Oct. 15, 1979, Ser. No. 85,154
Claims priority, application Fed. Rep. of Germany, Feb. 27, 1976, 2608020
Int. Cl.³ C07D *263/08, 277/62, 417/00*; C09B *57/00*
U.S. Cl. 548—159 **3 Claims**

1. Dyestuff of the formula



wherein

E represents hydrogen, methyl, ethyl, β-cyanoethyl, β-chloroethyl, β-acetoxyethyl, β-methoxyethyl, β-ethoxyethyl, β-hydroxyethyl, β-carbomethoxyethyl, β-carboethoxyethyl, n-propyl, isopropyl, n-butyl, n-pentyl, benzyl, β-phenylethyl or phenyl;

M represents a phenyl; phenyl monosubstituted to pentasubstituted by chlorine, monosubstituted to disubstituted by C_1–C_4-alkyl or monosubstituted by phenyl, methoxy, ethoxy, phenoxy, carboxylic acid C_1–C_2-alkyl ester, amino or acetylamino; or naphthyl;

X^1 represents =C(W')—;

W' represents CN, COOH, COO—C_1—C_2-alkyl or

B represents the remaining members of an unsubstituted benzthiazole-(2)-, benzoxazole-(2)- or benzimidazole-(2)—radical or one of the foregoing radicals substituted with 1–2 C_1–C_4-alkyls; 1–2 chlorines; or one bromine, C_1–C_2-alkoxy, C_1–C_2-alkylsulphonyl, di-(C_1–C_2-alkyl)-aminosulphonyl, phenyl, cyclohexyl, nitro or amino;

E^1 and E^2 independently represent hydrogen, ethyl, chlorine, bromine, phenylmercapto, tolymercapto, or chlorophenylmercapto.

4,249,011

POLY(ETHYLENICALLY UNSATURATED ALKOXY) HETEROCYCLIC COMPOUNDS

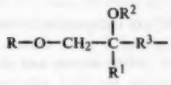
Larry A. Wendling, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, MN

Filed Jun. 25, 1979, Ser. No. 51,876
Int. Cl.³ C07D *233/72, 233/96*
U.S. Cl. 548—312 **15 Claims**

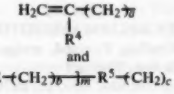
1. A compound of the formula:

$$A^1—Z—A^2$$

wherein A^1 and A^2 are independently groups having terminal ethylenic unsaturation said groups having the formula:

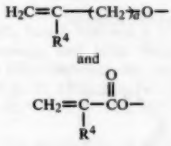


in which R—O— is a monovalent residue of an aliphatic terminally unsaturated primary alcohol, ROH, where R is selected from the formulae:



wherein

E is selected from the formulae

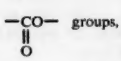


a and c are independently integers of from 1 to 6,

b is zero or an integer of from 1 to 6,

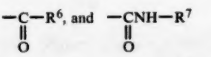
R^1 and R^4 are independently hydrogen or methyl,

R^5 is an aliphatic group having 1 to 15 carbon atoms which may be interrupted with up to two groups selected from the class consisting of ether oxygen groups or


groups,

R^5 having a valence of m+1 wherein m is an integer of 1 to 5,

R^2 is selected from the group of hydrogen,



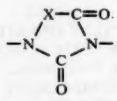
wherein

R^6 is selected from alkyl and alkenyl groups having up to 5 carbon atoms,

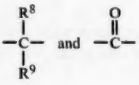
R^7 is an aliphatic group of up to 8 carbon atoms or aromatic group of up to 8 carbon atoms,

R^3 is an alkylene group having 1 to 6 carbon atoms and up to one catenary oxygen in the group, and

Z is a heterocyclic group of the formula:



wherein X is a divalent group required to complete a 5-membered heterocyclic ring and is selected from the group of



wherein R^8 and R^9 are independently selected from hydrogen, alkyl groups of 1 to 4 carbon atoms, cycloalkyl groups of 3 to 6 carbon atoms, and phenyl groups, and

A^3 is a group having terminal ethylenic unsaturation as defined above for A^1 and A^2.

4,249,012

CERTAIN 4-FORMAMIDOTHIAZOLES

Roger Crossley, Reading, England, assignor to John Wyeth & Brother Ltd., Taplow, England

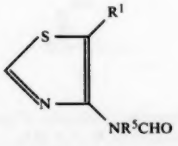
Division of Ser. No. 740,634, Nov. 10, 1976, Pat. No. 4,134,984. This application May 15, 1978, Ser. No. 906,296

Claims priority, application United Kingdom, Nov. 18, 1975, 47481/75; May 28, 1976, 22479/76

Int. Cl.³ C07D *277/38*

U.S. Cl. 548—195 **4 Claims**

1. A compound of the formula



wherein R^1 is hydrogen, lower alkyl or phenyl, and R^5 is hydrogen or COR where R is hydrogen, n-alkyl of 1–4 carbon atoms, which may be substituted by chlorine, or cyclopropyl.

4,249,013

CONJUGATIVELY LINKED TETRATHIAFULVALENES AND METHOD FOR PREPARATION THEREOF

Robert C. Haddon, Summit; Martin L. Kaplan, Morris Plains, and Fred Wudl, Chester, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Division of Ser. No. 887,882, Mar. 20, 1978, abandoned. This application Jan. 26, 1979, Ser. No. 6,655

Int. Cl.³ C07D *339/06*

U.S. Cl. 549—35 **2 Claims**

1. p-phenylenebistetrathiafulvalene.

4,249,014

NOVEL BENZOTHIENYL AMINO (PROPYL AND BUTYL) KETONES

Max F. Robba, and Michel Aurousseau, both of Paris, France, assignors to Innothera, Arcueil, France

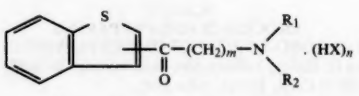
Division of Ser. No. 672,109, Mar. 31, 1976, Pat. No. 4,186,136. This application Sep. 19, 1979, Ser. No. 76,872

Claims priority, application France, Apr. 3, 1975, 75 10422

Int. Cl.³ C07D *333/58*

U.S. Cl. 549—49 **9 Claims**

1. A compound having the formula



wherein

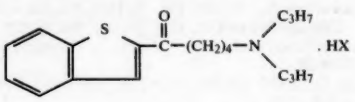
R_1 and R_2 are alkyls having 1 to 4 carbon atoms or allyl;

HX is selected from the group consisting of hydrochloric acid, bromhydric acid, sulfuric acid, phosphoric acid, boric acid, oxalic acid, maleic acid, malic acid, fumaric acid, citric acid, embonic acid, methanesulfonic acid, acetylsalicylic acid, nicotinic acid, parachlorophenoxyacetic acid, parachlorophenoxyisobutyric acid, methyl bromide, methyl iodide, ethyl bromide, butyl bromide and benzyl bromide;

m is 3 or 4; and

n is 0 or 1.

5. A compound as claimed in claim 1 having the formula



wherein HX is methyl iodide.

4,249,015

PREPARATION OF ORGANIC ACIDS AND/OR ESTERS

John A. Schofield, and John E. Hawes, both of Kent, England, assignors to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 816,572, Jul. 18, 1977, abandoned. This application Jan. 26, 1979, Ser. No. 6,975

Claims priority, application United Kingdom, Jul. 23, 1976, 30817/76

Int. Cl.³ C07C *67/39, 69/74, 69/76*

U.S. Cl. 560—1 **12 Claims**

1. A process for preparing carboxylic acids and/or esters from 1-substituted 2,2,2-trihaloethanols or acylated derivatives thereof which comprises reacting the 1-substituted-2,2,2-trihaloethanol or acylated derivative with molecular oxygen in the presence of a catalyst comprising copper complexed with at least one molecule of a ligand containing 1,10-phenanthroline or 2,2'-bipyridyl; thereby converting the

moiety of 1-substituted 2,2,2-trihaloethanol, wherein X represents halogen and R is hydrogen or an acyl group to a carboxylic acid and/or ester grouping of the formula

wherein R′ represents hydrogen or alkyl of 1 to 6 carbon atoms; said reaction being carried out in an alcohol or aqueous alcohol solvent which optionally contains alkali metal hydroxide or alkoxide and in which the alcohol is of the formula R″OH, wherein R″ is alkyl of 1 to 6 carbon atoms, said alcohol also functioning as the alcohol reactant source for the formation of carboxylic acid esters in the reaction.

4,249,016

ω-ARYL-13,14-DIDEHYDRO-PGE COMPOUNDS

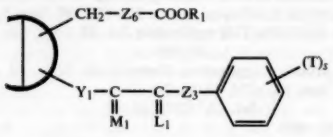
Herman W. Smith, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 657,739, Feb. 13, 1976, Pat. No. 4,029,681. This application Mar. 7, 1977, Ser. No. 776,552

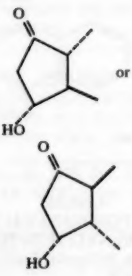
Int. Cl.³ C07C *177/00*

U.S. Cl. 560—53 **37 Claims**

1. A prostaglandin analog of the formula:



wherein D is



whereyn Y_1 is —C≡C—;

wherein Z_6 is

(1) cis—CH=CH—CH_2—$(CH_2)_g$—CH_2—,

(2) cis—CH=CH—CH_2—$(CH_2)_g$—CF_2—,

(3) cis—CH_2—CH=CH—$(CH_2)_g$—CH_2—,

(4) —$(CH_2)_3$—$(CH_2)_g$—CH_2—, or

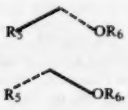
(5)—$(CH_2)_3$—$(CH_2)_g$—CF_2—,

wherein g is one, 2, or 3:

wherein Z_3 is oxa or methylene;

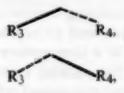
wherein T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, and s is zero, one, 2, or 3, the various T's being the same or different, with the proviso that not more than two T's are other than alkyl, with the further proviso that Z_3 is oxa only when R_3 and R_4 are hydrogen or methyl, being the same or different;

wherein M_1 is

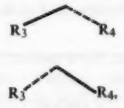


wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;

wherein L_1 is



or a mixture of



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro and

wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

4,249,017

TRIS(N-CARBALKOXYLAMINOMETHYL)PHOSPHINE OXIDES AND SULFIDES

Arlen W. Frank, Slidell, La., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Nov. 29, 1978, Ser. No. 964,852

Int. Cl.³ C07C *125/077, 161/00*

U.S. Cl. 560—148 **3 Claims**

1. Tris(N-carbalkoxylaminomethyl)phosphine oxides and sulfides having the formula $(RO_2CNHCH_2)_3PY$, where R is an alkyl radical having from 1 to 6 carbon atoms and Y is selected from the group of oxygen and sulfur.

4,249,018

SYNTHESIS OF CITRIC ACID OR CITRATES

David Ginsburg, Haifa, Israel; Wilfried J. W. Mayer, Stuttgart, Fed. Rep. of Germany, and Allan Wexler, Mountaindale, N.Y., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Aug. 27, 1979, Ser. No. 70,136

Int. Cl.³ C07C *59/265, 69/704*

U.S. Cl. 560—180 **2 Claims**

1. A process for the production of citric acid or a citrate ester comprising the steps of reducing naphthalene to isotetralin, converting the isotetralin to 9,10-epoxy-1,4,5,8,9,10-hexahydronaphthalene, converting the epoxy derivative into trans-9,10-dihydroxy-1,4,5,8,9,,10-hexahydronaphthalene, converting the trans-dihydroxy derivative into cyclodeca-1,6-diene-4,9-dione, converting the dione into the bis-cyanohydrin derivative, ozonating the bis-cyanohydrin derivative, reacting

the ozonated derivative step-wise with hydrogen peroxide and diazomethane and recovering citric acid or a citrate ester.

4,249,019

PROCESS FOR PRODUCING CARBOXYLIC ESTERS

Nobuhiro Tamura; Yohei Fukuoka; Setsuo Yamamatsu; Yoshio Suzuki; Ryoichi Mitsui, all of Fuji, and Tadayuki Ibuki, Fuchu, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Nov. 13, 1978, Ser. No. 960,324

Claims priority, application Japan, Nov. 17, 1977, 52-137267; Nov. 17, 1977, 52-137268; Nov. 17, 1977, 52-137271

Int. Cl.³ C07C *67/39, 69/14, 69/54, 69/58*

U.S. Cl. 560—208 **9 Claims**

1. In a process for producing a carboxylic ester by the reaction between an aldehyde and an alcohol in the presence of oxygen with a catalyst at a temperature of 0° to 200° C., the improvement wherein the catalyst consists essentially of (I) palladium, (II) at least one compound selected from the group consisting of lead compounds, thallium compounds and mercury compounds and (III) at least one compound selected from the group consisting of alkali metal and alkaline earth metal oxides, hydroxides, carbonates and carboxylic acid salts.

4,249,020

OXYDEHYDROGENATION OF CERTAIN ≧C4 SATURATED OXYHYDROCARBON COMPOUNDS

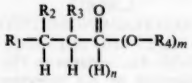
Daniel W. McNeil, New Fairfield, and Benjamin Phillips, Riverside, both of Conn., assignors to Union Carbide Corporation, New York, N.Y.

Filed Aug. 19, 1977, Ser. No. 826,117

Int. Cl.³ C07C *45/65, 51/377, 67/30*

U.S. Cl. 560—214 **16 Claims**

1. A process for converting at least one saturated organic compound having the structure



wherein R_1, R_2 and R_3 may each be H, CH_3 or C_2H_5, with the proviso that the sum of the carbon atoms in the R_1, R_2 and R_3 radicals is 1 to 3, inclusive,

R_4 is either H or CH_3,

n is 0 or 1, and

m is 1–n,

to the corresponding α,β-unsaturated acid, ester and/or aldehyde which comprises

catalytically oxidatively dehydrogenating the saturated organic compound exothermically by contacting said saturated organic compound with a calcined catalyst composition having the formula

$$Mo_aV_bNb_cO_dP_e$$

a is 16,

b is about 0.5 to 16,

where c is up to 8 but greater than 0,

d is >0.0,

e is ≧0.0,

with the proviso that d+e corresponds to the amounts of O and/or P needed to satisfy the valence requirements of the Mo, V, and Nb in the form of oxides and/or phosphates thereof.

4,249,021

INDANACETIC ACID COMPOUNDS

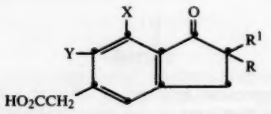
Edward J. Cragoe, Jr., Lansdale, Pa.; Haydn W. R. Williams, Dollard des Ormeaux, Canada, and Otto W. Woltersdorf, Jr., Chalfont, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Feb. 26, 1979, Ser. No. 15,095

Int. Cl.³ C07C *59/88*

U.S. Cl. 562—462 **2 Claims**

1. A compound of the formula:



wherein

X and Y are both chloro;

R^1 is lower alkyl;

R is phenyl, and the pharmaceutically acceptable salts thereof.

4,249,022

PROCESS FOR THE MANUFACTURE OF 1,4-DISUBSTITUTED BICYCLIC OR TRICYCLIC COMPOUNDS AND NEW 1,4-DISUBSTITUTED BICYCLIC COMPOUNDS

Leonardo Guglielmetti, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

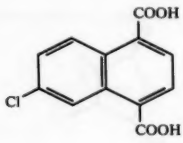
Continuation of Ser. No. 779,395, Mar. 21, 1977, abandoned, which is a division of Ser. No. 724,142, Sep. 17, 1976, Pat. No. 4,048,212, which is a division of Ser. No. 629,180, Nov. 5, 1975, Pat. No. 4,011,261. This application Jul. 23, 1979, Ser. No. 60,089

Claims priority, application Switzerland, Nov. 14, 1974, 15190/74; Nov. 14, 1974, 15191/74

Int. Cl.³ C07C *63/38*

U.S. Cl. 562—488 **1 Claim**

1. The naphthalene derivative of the formula



4,249,023

PROCESS FOR MANUFACTURING TRIPHENYLPHOSPHINE

Emil A. Broger, Magden, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed May 21, 1979, Ser. No. 40,950

Claims priority, application Switzerland, Jun. 2, 1978, 6071/78

Int. Cl.³ C07F *9/50*

U.S. Cl. 568—17 **9 Claims**

1. A process for producing triphenylphosphine which comprises:

(a) reacting triphenylphosphine oxide with phosgene in chloroform to produce a triphenylphosphine dichloride-chloroform adduct; and

(b) reducing said triphenylphosphine dichloride-chloroform adduct with hydrogen at a temperature of at least about 130° C. in the presence of chloroform as the solvent or in the absence of a solvent, to give triphenylphosphine.

4,249,024

IN SITU CONDUCTIMETRIC END POINT DETERMINATION OF THE OXYETHYLATION OF PHENOLIC COMPOUNDS

David C. Sanders, West Lafayette, Ind., assignor to Great Lakes Chemical Corp., West Lafayette, Ind.

Filed Aug. 22, 1979, Ser. No. 68,710
Int. Cl.[3] C07C *41/03*
U.S. Cl. 568—608 13 Claims

1. In a method for the reactive oxyethylation of phenols at temperatures in excess of 100° C., said reaction occurring in the presence of a catalyst, the improvement comprising:

monitoring the oxyethylation reaction by repetitive in situ measurements of the conductance of representative samples of the reaction mixture; and

terminating the reaction when the conductance measurements establish that the electrical conductivity of the reaction mixture significantly increases.

4,249,025

NOVEL PROCESS FOR SYNTHESIS OF A LIQUID IRRITANT, 1-METHOXYCYCLOHEPTRATRIENE

William R. Hydro, Bel Air, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 28, 1978, Ser. No. 903,642
Int. Cl.[3] C07C *41/06*
U.S. Cl. 568—667 17 Claims

1. An improved method for synthesizing the irritant 1-methoxycycloheptatriene in increased yields and purity through the steps of

(a) reacting an aqueous solution of cycloheptatrienyl tetrafluoroborate with methanol and sodium bicarbonate to produce 7-methoxycycloheptatriene;

(b) thermally isomerizing said 7-methoxycycloheptatriene by heating to produce an isomer product containing as its major constituent 3-methoxycycloheptatriene;

(c) subsequently isomerizing said 3-methoxycycloheptatriene by acid catalyzed rearrangement with methanolic hydrogen chloride followed by neutralization to give a crude 1-methoxycycloheptatriene product and

(d) filtering and fractionally distilling said crude product the improvement comprising the step of utilizing a polymerization inhibitor in at least one of the reaction steps to minimize formation of polymer impurities and thereby increase the overall yield and purity of the product 1-methoxycycloheptatriene.

4,249,026

SEPARATING 2,5-XYLENOL FROM A MIXTURE OF 2,5-XYLENOL AND 2,4-XYLENOL

John R. Dodd, Ponca City, Okla., assignor to Conoco, Inc., Ponca City, Okla.

Filed Nov. 26, 1979, Ser. No. 97,248
Int. Cl.[3] C07C *37/68, 37/86*
U.S. Cl. 568—750 3 Claims

1. A method for separating 2,5-xylenol from 2,4-xylenol/2,5-xylenol mixtures comprising

(a) preferentially alkylating 2,5-xylenol in said mixture in the presence of an alkylating agent selected from the group consisting of isobutylene, 2-methyl-1-propene, 2-methyl-1-butene, 2-methyl-1-pentene and 2-methyl-1-heptene and a strongly acidic sulfonated divinylbenzene-styrene copolymer at a temperature of up to 60° C. to yield predominantly 4-t-alkyl-2,5-xylenol,

(b) fractionating the resulting reaction mixture to remove all unreacted xylenols,

(c) selectively dealkylating 4-t-alkyl-2,5-xylenol while in admixture with 6-t-alkyl-2,4-xylenol to yield a mixture containing predominantly 2,5-xylenol and 6-t-alkyl-2,4-xylenol by heating the mixture to a temperature of up to 60° C. at a pressure of from about 0.5 to about 5 atmospheres in the presence of a polymer bound sulfonic acid catalyst, then fractionating the resulting mixture to separate 2,5-xylenol from the remaining components in the mixture obtained upon selective dealkylation.

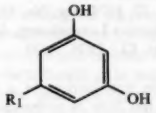
4,249,027

PROCESS FOR THE PREPARATION OF 5-SUBSTITUTED RESORCINOLS AND RELATED INTERMEDIATES

Jacques Gosteli, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 608,797, Aug. 28, 1975, which is a continuation-in-part of Ser. No. 419,579, Nov. 28, 1973, abandoned. This application Nov. 1, 1976, Ser. No. 737,377
Claims priority, application Switzerland, Dec. 7, 1972, 17825/72
Int. Cl.[3] C07C *39/08, 39/12*
U.S. Cl. 568—763 8 Claims

1. Process for the preparation of 5-substituted resorcinols of the formula



(I)

wherein

R_1 represents alkyl having 1–21 carbon atoms or phenyl which comprises reacting substantially equimolar amounts of a carboxylic acid ester of the formula II

$$R_1—C{\equiv}C—CO—O—R_2 \quad \text{(II)}$$

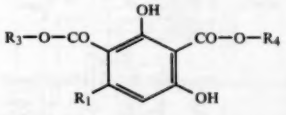
wherein

R_2 represents alkyl having 1–4 carbon atoms and

R_1 has the meaning given under formula I, and of a diester of 3-oxoglutaric acid of the formula III

$$R_3—O—CO—CH_2—CO—CH_2—CO—O—R_4 \quad \text{(III)}$$

wherein R_3 and R_4 each represents alkyl having 1–4 carbon atoms, in the presence of about 2 to 2.5-fold molar amount of an alkaline condensation agent selected from the group consisting of an alkali metal hydride in an organic solvent selected from the group consisting of benzene, toluene, and 1,2-dimethoxyethane and of an alkali metal lower alkanolate in the corresponding lower alkanol within the temperature range of 0° to 140° C., with a final reaction temperature of at least 80° C., and subjecting the resulting dihydroxyiso-phthalic acid ester of the formula IV



(IV)

wherein R_1 has the meaning given under formula I and R_3 and R_4 have the meaning given under formula III to a procedure selected from hydrolysis in a dilute aqueous or aqueous-lower alkanolic alkali hydroxide solution at a temperature of between 60° C. and 100° C. followed by decarboxylation of the hydrolysed product by boiling in a mixture of concentrated sulfuric acid and water in a ratio of about 10 to 1 to about 1 to 4 parts by volume, and simultaneous hydrolysis and decarboxylation by boiling in a mixture of concentrated sulphuric acid and water in a ratio of about 10 to 1 to about 1 to 4 parts by volume; and in each case recovering the compound of the formula I from the mixture of sulphuric acid and water.

4,249,028

SELECTIVE CONVERSION OF D-ISOLIMONENE TO D-3-MENTHENE

James O. Bledsoe, Jr., and Carlos G. Cardenas, both of Jacksonville, Fla., assignors to SCM Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 5,138, Jan. 22, 1979, Pat. No. 4,204,080. This application Dec. 11, 1979, Ser. No. 102,530

Int. Cl.[3] C07C *13/20, 5/05, 5/13;* B01J *23/44*

U.S. Cl. 585—273 6 Claims

1. A method of selectively producing d-3-menthene which comprises contacting d-isolimonene with hydrogen and a palladium hydrogenation catalyst under pressure and temperature conditions sufficient to produce optically active d-3-menthene as the major product component.

4,249,029

PROCESS FOR THE PREPARATION OF HIGHER ALKENES

Claude Hennart, Seraincourt; Georges Martin, and Jean Favreau, both of Saint-Benoit, all of France, assignors to Airwick Industries, Inc., Carlstadt, N.J.

Filed Jul. 27, 1979, Ser. No. 61,347

Claims priority, application Luxembourg, Aug. 8, 1978, 80093

Int. Cl.[3] C07C *1/00*

U.S. Cl. 585—638 8 Claims

1. A process for the preparation of a straight-chain or branched alkene which has 20 to 24 carbon atoms and in which the ethylenic bond is located after a carbon atom numbered between 8 and 11, which process comprises reacting, in an anhydrous solvent, an organometallic copper compound consisting of alkenyl(R)-copper or alkenyl(R)-cuprolithium with an alkylsulfonate of the formula R′—O—SO_2—R″, R being an alkenyl radical which has 9 to 22 carbon atoms and in which the ethylenic bond is located after a carbon atom numbered between 8 and 11, counting from the opposite end of the chain to that carrying the copper, and R′ being an alkyl radical having 1 to 15 carbon atoms, R and R′ together containing 20 to 24 carbon atoms, and R″ being a lower alkyl radical having 1 to 5 carbon atoms or a phenyl or tolyl radical.

4,249,030

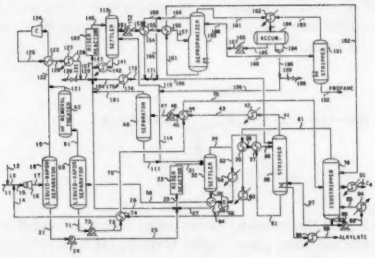
ALKYLATION PROCESS

Charles C. Chapman, and Paul D. Hann, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 2, 1979, Ser. No. 63,006

Int. Cl.[3] C07C *2/56;* F28D *7/00*

U.S. Cl. 585—716 21 Claims



1. Apparatus comprising:

an olefin alkylation reactor means;

means for supplying a feed comprising at least one olefin, an acid catalyst, and at least one isoparaffin to said olefin alkylation reactor means;

a settler means;

means for withdrawing a reaction product comprising the alkylate of said at least one olefin, said acid catalyst and any unreacted portion of said at least one isoparaffin from said olefin alkylation reactor means and for supplying said reaction product as a feed to said settler means;

a stripping column means;

means for withdrawing a separated stream comprising the alkylate of said at least one olefin, any unreacted portion of said at least one isoparaffin and a reduced concentration of said acid catalyst, than was present in said reaction product, from said settler means and for supplying said separated stream as a feed to said stripping column means;

a first liquid-vapor separator means;

means for withdrawing a stripped stream comprising the alkylate of said at least one olefin and a reduced concentration of any unreacted portion of said at least one isoparaffin, than was present in said separated stream, from said stripping column means and for supplying said stripped stream to said first liquid-vapor separator means;

an isostripper means; and

means for withdrawing an isostripper feed stream comprising the alkylate of said at least one olefin and a reduced concentration of any unreacted portion of said at least one isoparaffin, than was present in said stripped stream, from said first liquid-vapor separator means and for supplying said isostripper feed stream to said isostripper means.

14. An alkylation process comprising the steps of:

alkylating at least one olefin and at least one isoparaffin in the presence of an acid catalyst to thereby produce a reaction product comprising the alkylate of said at least one olefin, said acid catalyst and any unreacted portion of said at least one isoparaffin;

phase separating a substantial portion of said acid catalyst from said reaction product to thereby produce a separated product comprising the alkylate of said at least one olefin, any unreacted portion of said at least one isoparaffin and a reduced concentration of said acid catalyst, than was present in said reaction product;

stripping a substantial portion of said acid catalyst remaining in said separated product and at least a portion of any unreacted portion of said at least one isoparaffin from said separated product to thereby produce a stripped product;

phase separating said stripped product to thereby provide a phase separated product having a reduced concentration of any unreacted portion of said at least one isoparaffin than was present in said stripped product; and

stripping the remaining portion of said at least one isoparaffin from said phase separated product to thereby provide a substantially pure alkylate of said at least one olefin.

4,249,031

PROCESS FOR THE PREPARATION OF A HYDROCARBON MIXTURE

Eit Drent, and Ringnerus P. van der Werf, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 25, 1980, Ser. No. 133,704

Claims priority, application Netherlands, Apr. 12, 1979, 7902886

Int. Cl.[3] C07C *1/20*

U.S. Cl. 585—733 10 Claims

1. A process for the preparation of a hydrocarbon mixture, comprising contacting one or more oxygen-containing organic compounds in the vapor phase with one or more zinc halides in a contact zone at elevated temperature in the presence of a high-boiling compound which has a melting point which is lower than the temperature at which the process is carried out, and a vapor pressure at said temperature which is at most 0.05 of the pressure of the oxygen-containing organic compound(s), and in which the oxygen-containing organic compound(s) and zinc halide are soluble.

4,249,032

MULTIZONE GRAPHITE HEATING ELEMENT FURNACE

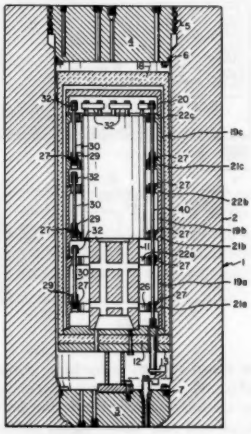
Charles W. Smith, Jr., Fairview, and Franz X. Zimmerman, Erie, both of Pa., assignors to Autoclave Engineers, Inc., Erie, Pa.

Filed Apr. 6, 1979, Ser. No. 27,917

The portion of the term of this patent subsequent to Nov. 21, 1995, has been disclaimed.

Int. Cl.[3] **F27B** *5/14;* **F27D** *11/02;* **H05B** *3/06*

U.S. Cl. 13—25 **6 Claims**



1. A multizone furnace having carbon or graphite rod heating elements comprising

a plurality of hollow graphite cylinders having a common generally vertical axis,

a plurality of annular graphite horizontal flanges associated with the lower portions of each cylinder,

said flanges extending radially inward of the inner wall of said cylinders, said flanges having a plurality of circumferentially spaced openings therein,

electrically non-conductive spacers positioned in said openings and extending above said ring surface,

graphite heating elements passing into said spacers and being supported from said horizontal flanges near the lower ends of the elements with at least the major portion of the length of the elements extending above the flange from which they are supported,

said elements supported from each horizontal flange being joined by connecting blocks to form a series circuit,

whereby each series circuit associated with one horizontal flange powers a separately controllable heating zone.

4,249,033

VENTED RADIO FREQUENCY SHIELDED ENCLOSURE

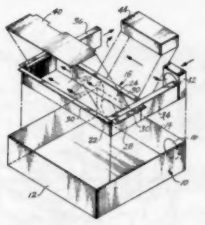
David L. Darakjy, and Leland A. Zanteson, both of Pasadena, Calif., assignors to System Development Corporation, Santa Monica, Calif.

Filed Apr. 13, 1979, Ser. No. 29,725

Int. Cl.[3] **H05K** *9/00*

U.S. Cl. 174—16 R **1 Claim**

1. A ventilated enclosure providing shielding of electronic equipment from external radio frequency energy up to frequencies of the order of 3000 megahertz, comprising an inner metal container forming a chamber surrounding the equipment, hollow rectangular input and output ducts connected to said chamber, the ducts being parallel to each other and forming the end walls of the inner container, the ducts having openings within the container, an outer fully enclosed container surrounding the metal container and the ducts, the outer container forming a chamber between the outer ends of the ducts, the outer container having openings opposite the outer ends of the ducts, the openings being larger than the ends of the ducts, and means directing air into the outer container through one of said openings, a portion of the air being directed through the outer container and out the other opening and a portion of the air being directed through said ducts and said



inner container for cooling the equipment in the chamber, the ducts operating as waveguide means having a cutoff frequency above the frequencies of said external radio frequency energy, the length of the ducts forming the waveguide means being of the order of at least twice the freespace wavelength at said cutoff frequency of the radio frequency energy.

4,249,034

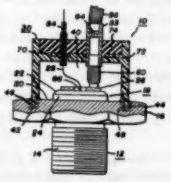
SEMICONDUCTOR PACKAGE HAVING STRENGTHENING AND SEALING UPPER CHAMBER

Julie Y. Fichot, Skaneateles, and Alfred Roesch, Auburn, both of N.Y., assignors to General Electric Company, Auburn, N.Y.

Filed Nov. 27, 1978, Ser. No. 963,807

Int. Cl.[3] **H05K** *7/20*

U.S. Cl. 174—52 H **15 Claims**



1. A hermetically sealed semiconductor package comprising:

a heatsink member having a semiconductor element mounted thereto;

an electrically insulative sleeve-shaped housing member mounted on said heat sink member and having a partition therein dividing said housing into upwardly and downwardly facing chambers, said downwardly facing chamber cooperating with said heat sink member to form a first closed chamber;

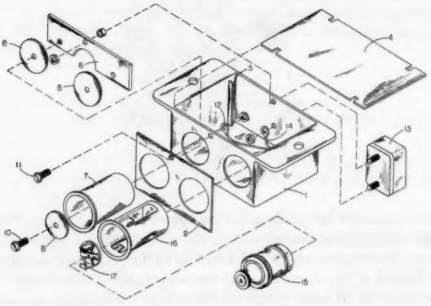
electrical terminal means extending through said partition connected to said semiconductor element; and

sealing means within said upwardly facing chamber in sealing relationship with said housing member and said electrical terminal means hermetically sealing said first closed chamber.

4,249,035
ELECTRICAL OUTLET BOX

Jerry O. Watley, Box 543, Cassville, Mo. 65625

Filed Feb. 19, 1980, Ser. No. 122,387
Int. Cl.³ H05K 5/00
U.S. Cl. 174—52 R 1 Claim



1. An outlet box of a type adapted to receive a current carrying wire and a ground wire said box comprising:

a non-conductive housing with a top side wall, a bottom side wall, two end walls, a front side wall, and a rear side wall;

entry means in the front side wall for allowing entry to the interior of said housing;

access means in the top side wall for allowing access to the interior of said housing;

a conductive rigid, rectangular bar for conducting electricity, said bar having planar front and back surfaces, and a thickness sufficient for rigidity;

vertical slot means slidably receiving said bar disposed on said end walls of said housing, whereby said planar front surface of said bar rests against said slot means and faces the front side wall of said housing;

a plurality of first conductive contact means for allowing the pickup of electricity from said bar, said conductive contact means projecting from to said planar front surface of said bar;

a plurality of conductive sleeves for receiving electrical current, said conductive sleeves each having a first end and a second end and an interior and an exterior, each said first end being completely open with a lip extending outwardly, perpendicular to the axis of the sleeve, each said second end being substantially closed and having means therein allowing one of said contact means to pass therethrough;

a first resilient insulating means for preventing the flow of electricity between each of said conductive sleeves and its respective contact means;

a second resilient insulating means for preventing the flow of electricity disposed between said conductive sleeve and said bar;

a conductive planar plate electrically connecting said sleeves to each other, said plate having a front surface and a rear surface, said plate being affixed flatly to the exterior of said front sidewall of said housing, and having hole means running from said front surface to said rear surface thereof for being aligned with said entry means;

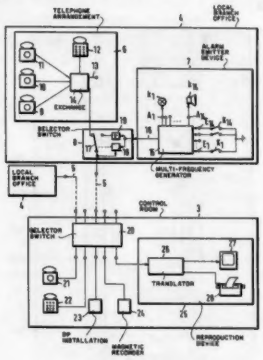
second conductive contact means connected to said conductive planar plate for electrically connecting said conductive planar plate to said ground wire; and

a circuit breaker electrically connected to said bar for electrically connecting the current carrying wire to said bar for disconnecting the circuit when more than a predetermined current is drawn therethrough.

4,249,036
REMOTE ALARM INSTALLATION

Manfred Kutzki, Berlin, Fed. Rep. of Germany, assignor to Berliner Bank AG, Berlin, Fed. Rep. of Germany

Filed Mar. 12, 1979, Ser. No. 19,497
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1978, 2810875
Int. Cl.³ H04M 11/04
U.S. Cl. 179—5 R 6 Claims



1. A remote alarm system, comprising, control station telephone apparatus and a control station alarm signal processing unit, a control station selector switch unit between said telephone apparatus and said alarm signal processing unit, remotely located telephone apparatus and a remotely located alarm signal emitter unit, a remotely located selector switch unit between said remotely located telephone apparatus and said alarm signal emitter unit, a dedicated telephone line between said switch units, said alarm signal emitter unit including a multi-frequency signal generator having a plurality of inputs and at least one output, said generator operating to output a composite output alarm signal which comprises a generator identification portion and a sensed input identification portion which is the source of the output signal, a set of condition sensing units connected respectively to said inputs, said selector switch units including first and second switch means respectively wherein said first switch means is responsive to said composite output alarm signal to switch said alarm signal emitter unit to said telephone line and said second switch means also being responsive to said composite output alarm signal to switch said telephone line to said alarm signal processing unit.

4,249,037
PYRAMID LOUDSPEAKERS WITH TWIN CROSS-PHASED MID-RANGE SPEAKERS

John L. Dexter, 791 Cascade Dr., Sunnyvale, Calif. 94086

Filed Nov. 8, 1978, Ser. No. 958,732
Int. Cl.³ H04R 1/02
U.S. Cl. 179—1 GA 27 Claims

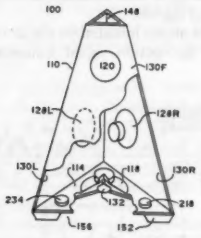
1. A loudspeaker unit responsive to a single input signal for providing lower frequency sound and at least two cross-phased higher frequency sound fronts angularly displaced with respect to one another forming an unsymmetrical sound propagation field, comprising:

a housing having at least a first side and a second side angularly displaced with respect to one another, each side having an opening means for directing at least a first sound front and a second sound front in angularly displaced directions forming an unsymmetrical sound propagation field,

a lower frequency speaker means mounted within the housing and responsive to the single input signal for providing

sound at frequencies primarily below a predetermined frequency; and

at least a first and a second higher frequency speaker means mounted on the first and second angularly displaced sides, and responsive to the single input signal for generating the first and second sound fronts at frequencies above a predetermined frequency in angularly displaced directions and in cross-phased relationship in which as the first sound front is generated in compression the second sound front is generated in rarification and as the first sound front is generated in rarification the second sound front is generated in compression.



4,249,038

STEREO DECODER WITH 19KHZ-PILOT SUPPRESSION AND IMPROVED OSCILLATOR PHASE LOCKING

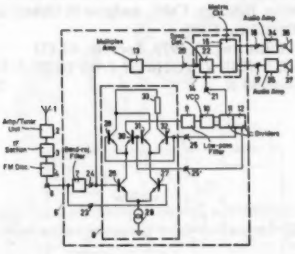
Albert J. Stienstra, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 7, 1979, Ser. No. 36,470

Claims priority, application Netherlands, May 17, 1978, 7805292

Int. Cl.³ H04H 5/00

U.S. Cl. 179—1 GD **2 Claims**



1. A stereo decoder for a multiplex stereo signal, said stereo decoder comprising an input, a pilot elimination circuit coupled to said input, a demultiplexer having a signal input and a carrier input, said demultiplexer signal input being coupled to said pilot elimination circuit, and a phase-locked loop having a phase-locked oscillator, an output of which is coupled to said demultiplexer carrier input, and a phase detector, wherein said phase detector has a reference input stage which comprises a differential amplifier, a first reference input of which being coupled to the said input of the stereo decoder and a second reference input of which being coupled to an output of the pilot elimination circuit.

4,249,039

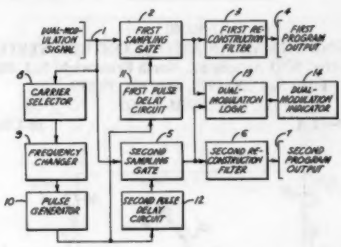
DUAL-MODULATION RECEIVING APPARATUS

Charles B. Fisher, 2850 Hill Park Rd., Montreal, Quebec H3H 1T1, Canada, and Sidney T. Fisher, 53 Morrison Ave., Mt. Royal, Montreal, Quebec H3H 1K3, Canada

Filed Mar. 31, 1980, Ser. No. 135,880

Int. Cl.³ H04H 5/00

U.S. Cl. 179—1 GS **2 Claims**



1. Receiving apparatus for a dual-modulation signal equivalent in waveform to a first carrier double-sideband amplitude-modulated by a first modulating wave, combined with a second carrier approximately equal in amplitude to, equal in frequency to, and spaced in phase by more than 10° and less than 90° from, said first carrier, double-sideband amplitude-modulated by a second modulating wave, producing a dual-modulation signal, which comprises:

first sampling means which samples said dual-modulation signal at regularly-occurring intervals, for short periods substantially centered in time on instants of zero-crossings of said second carrier at said first sampling means, with a sampling frequency greater than the minimum sampling or Nyquist frequency for said first modulating wave and equal to said first carrier frequency divided by an integer, and

second sampling means which samples said dual-modulation signal at regularly-occurring intervals, for short periods substantially centered in time on instants of zero-crossings of said first carrier at said second sampling means, with a sampling frequency equal to said sampling frequency of said first sampling means, and

first filter means which has a pass-band the same as the frequency band of said first modulating frequency, which receives the output of said first sampling means and delivers the output of said first filter means to a first output circuit, and

second filter means which has a pass-band the same as the frequency band of said second modulating wave, which receives the output of said second sampling means and delivers the output of said second filter means to a second output circuit, and

pulse generator means comprising carrier frequency selection means, frequency changing means and pulse timing means, which receives said dual-modulation signal, and generates a first sequence of regularly-occurring pulses with short duration substantially centered in time on zero-crossings of said second carrier at said first sampling means, with a repetition frequency greater than the minimum sampling or Nyquist frequency of said first modulating wave, and equal to said first carrier frequency divided by an integer, and delivers said first sequence of pulses as gating pulses to said first sampling means, and generates a second sequence of regularly-occurring pulses with short duration, substantially centered in time on zero-crossings of said first carrier at said second sampling means, with a repetition frequency equal to the repetition frequency of said first sequence of pulses, and delivers said second sequence of pulses as gating pulses to said second sampling means, and

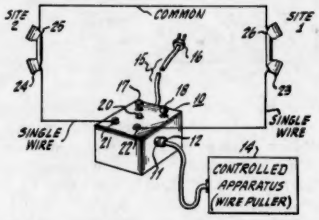
dual-modulation indicator means which actuates signalling means, and which receives the output of said first sampling means at a first input and the output of said second sampling means at a second input, and which comprises logic means which compares the pulse amplitudes at each of said inputs with the normal pulse amplitudes, and disables said signalling means when said pulse amplitudes at either of said inputs are not substantially equal to the normal pulse amplitudes with a dual-modulation signal.

4,249,040

TELEPHONE COMMUNICATION CONTROL SYSTEM

Albert F. Cutter, 1081 Apache St., North Brunswick, N.J. 08902

Filed Sep. 28, 1979, Ser. No. 79,979
Int. Cl.[3] H04M *11/00*
U.S. Cl. 179—2 A **10 Claims**



1. A telephone communication control system for use in controlling the operation of apparatus by monitoring the progress of said apparatus between a first and a second site, comprising in combination,

(a) a first series path including a first and second telephone handset arranged in a series circuit between said first and second sites to provide a talk/receive path therebetween, said series path including control means operative in a first mode to supply a first control signal when said series path is complete and operative in a second mode to provide a second control signal when said series path is opened manifesting an interruption of said talk/receive path,

(b) means responsive to said first control signal for applying an operating level to said monitored apparatus to enable operation of the same, and responsive to said second control signal for disabling operation of said apparatus when said series path is opened,

(c) switching means associated with at least one of said handsets to enable a user to selectively open or close said series path.

4,249,041

DICTATION-TRANSCRIPTION SYSTEM

Jack E. Smith, Jr., and Paul C. Mason, both of Thomaston, Ga., assignors to Lanier Business Products, Inc., Atlanta, Ga.

Filed Mar. 25, 1977, Ser. No. 781,359
Int. Cl.[2] G11B *27/10*
U.S. Cl. 369—28 **27 Claims**

1. In a recording system for recording dictation on a recording medium including a plurality of recording tracks, said system including a recording device, motion control means for moving said medium selectively in one of a forward direction and a reverse direction relative to said recording device, dictate movement means for operating said motion control means to move said medium in the forward direction, and means for transmitting voice-generated dictation signals to said recording device for recording on a first track of said plurality of tracks while said medium is moving in the forward direction;

the improvement wherein said recording system includes an instruction recording means comprising:

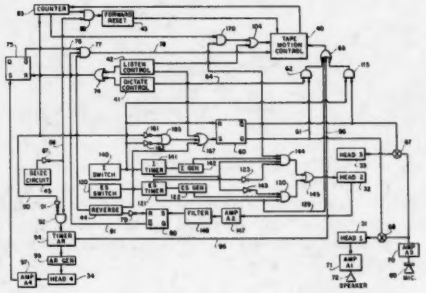
means for selectively generating an instruction indexing signal which is independent of voice-generated signals;

means for transmitting said instruction indexing signal to said recording device for recording on a second of said plurality of tracks;

means for transmitting voice-generated instruction signals to said recording device for recording on one of said plurality of tracks other than said first track;

instruction movement means for operating said motion control means to move said medium in the forward direction during recording of said instruction indexing signal and said instruction signals;

return movement means initiated by the termination of operation of said instruction signal transmitting means for



operating said motion control means to move said recording medium in the forward direction until the farthest point along said medium at which dictation signals are recorded in said first track is reached at said recording device; and

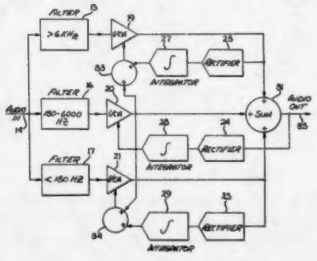
dictate disabling means for rendering said dictation signal transmitting means inoperative during operation of said instruction signal transmitting means and until said farthest point along said medium at which dictation signals are recorded in said first track is reached at said recording device.

4,249,042

MULTIBAND CROSS-COUPLED COMPRESSOR WITH OVERSHOOT PROTECTION CIRCUIT

Robert A. Orban, Belmont, Calif., assignor to Orban Associates, Inc., San Francisco, Calif.

Filed Aug. 6, 1979, Ser. No. 64,171
Int. Cl.[3] H04B *1/66;* H04M *1/00;* H03F *1/36*
U.S. Cl. 179—15.55 R **16 Claims**



1. A multiband compressor for compressing an input signal comprising:

a first and a second filter for dividing said input signal into at least a first and a second frequency band, said filters coupled to receive said input signal;

first gain control means for controlling the gain of said first band, coupled to said first filter;

second gain control means for controlling the gain of said second band, coupled to said second filter;

combining means for combining the outputs of said first and second gain control means, coupled to the outputs of said first and second gain control means;

first control signal generation means for providing a first control signal for controlling the gains of said first and second gain control means, said first generation means coupled to receive said output of at least said first gain control means and coupled to said first and second gain control means;

second control signal generation means for providing a second control signal to control said gain of said second gain control means, said second generation means coupled to receive said output of said second gain control means and coupled to provide control to said second gain control means when said output of said second gain control means exceeds a predetermined level,

whereby said compressor provides both multiband and wideband compression.

4,249,043

ELECTRET TRANSDUCER BACKPLATE, ELECTRET TRANSDUCER AND METHOD OF MAKING AN ELECTRET TRANSDUCER

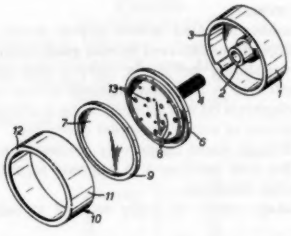
Adrian J. Morgan, Woodbridge; John K. Williams, Ipswich, and Ronald Else, Woodbridge, all of England, assignors to The Post Office, London, England

Filed Nov. 28, 1978, Ser. No. 965,316

Claims priority, application United Kingdom, Dec. 2, 1977, 50336/77

Int. Cl.[3] **H04R** *19/00, 31/00*

U.S. Cl. 179—111 E **14 Claims**



1. An electret transducer including a backplate and an electret foil diaphragm mounted over a face of the backplate, wherein

the backplate is moulded from a thermo-softening plastics material rendered electrically conducting by electrically conducting particles distributed therethrough,

the backplate is provided with protruding portions accurately moulded on said face of the backplate and protruding a predetermined distance from said face and the diaphragm is in contact with the protruding portions and out of contact with the rest of the face of the backplate,

the hardness of the material of the backplate is greater than 40 units as measured in the "Shore D" hardness test, and

the flexural rigidities of the backplate and of the diaphragm are such that, in use, the deflection of the diaphragm is at least twenty times as great as the deflection of the backplate.

4,249,044

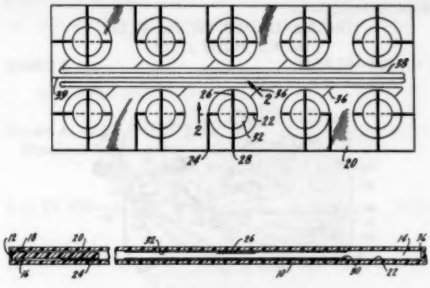
MEMBRANE SWITCH WITH MEANS FOR PREVENTING CONTAMINATION OF THE INTERIOR THEREOF

Willis A. Larson, Crystal Lake, Ill., assignor to Oak Industries, Inc., Crystal Lake, Ill.

Filed Apr. 23, 1979, Ser. No. 32,113

Int. Cl.[3] **H01H** *13/70*

U.S. Cl. 200—5 A **12 Claims**



1. In a membrane switch, a substrate, a plurality of first conductors formed on said substrate, a flexible membrane, a plurality of second conductors formed on said membrane, a spacer positioned between said substrate and membrane, openings in said spacer in register with aligned first and second conductors, said membrane moving toward said substrate through an opening to cause contact between aligned first and second conductors in response to pressure upon the exterior of said membrane, and vent passage means interconnecting said spacer openings, said vent passage means including a main labyrinth passage and secondary passages connecting each spacer opening with said main passage.

4,249,045

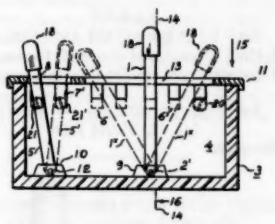
SELECTOR SWITCH

Conan H. Spaderna, 39 Biltmore St., Springfield, Mass. 01108

Filed Feb. 26, 1979, Ser. No. 15,187

Int. Cl.[3] **H01H** *21/54*

U.S. Cl. 200—15 **8 Claims**



1. A selector switch, comprising a housing of insulating material, a trough, formed inside the housing of insulating material and studded with fixed terminal-type contacts, separately connected with pieces of equipment for their feeding from an electrical source; at least one conducting main lever, designed for selectively latching with the contacts, and having an insulating handle, the main lever having a pivot pin, extending through one end thereof so as to allow the lever to pivot in the trough with a small deviation of the runway against the troughway thereof, and further comprising a gate switch lever with a pivot pin extending through one end thereof and electrically connected to the pivot pin of the main lever via a wire extending therebetween, and a separate fixed contact mounted in said housing and extending into the troughway adjacent the

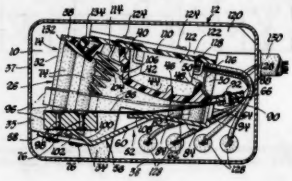
pathway of said gate switch lever for allowing the gate switch lever to make and break a feeding connection between the electrical source connected to the separate fixed contact and the wire running to the pivot pin of the main lever.

4,249,046

INERTIA SENSOR SWITCH

Gerald D. Livers; Douglas R. Schafer, and Walter E. Thiele, all of Santa Barbara, Calif., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 11, 1979, Ser. No. 47,150
Int. Cl.[3] H01H *35/14*
U.S. Cl. 200—61.45 R **3 Claims**



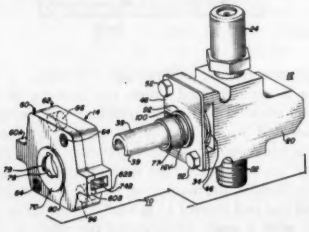
1. A sensor comprising, in combination, a base including contact means, an elongated frame mounted on the base in spaced relationship to the contact means and including adjustable mounting means adjacent one end thereof and adjustable abutment means adjacent the other end thereof, an elongated generally planar spring member extending longitudinally of the frame and located intermediate the frame and the contact means, means mounting one end portion of the spring member to the adjustable frame mounting means, a mass secured to the other end portion of the spring member and engageable with the adjustable frame abutment means to deflect the spring member and locate the mass in spaced relationship to the contact means, the frame mounting means being adjustable to control the deflection of the spring member intermediate the ends thereof and the preload force biasing the mass into engagement with the frame abutment means, the abutment means being adjustable to control the travel distance of the mass to the contact means, and means on the frame engageable with the spring member intermediate the end portions thereof to limit vibrational movement of the spring member relative to the frame.

4,249,047

GAS VALVE-SWITCH ASSEMBLY

Norman M. Huff, Chicago, and George T. Horodeck, Princeton, both of Ill., assignors to Harper-Wyman Company, Hinsdale, Ill.

Filed Aug. 14, 1978, Ser. No. 933,174
Int. Cl.[3] H01H *9/06*
U.S. Cl. 200—61.86 **14 Claims**



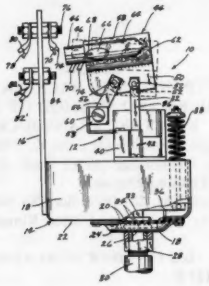
9. An electrical switch for releasable axial attachment to a gas valve having switch retention structure and a rotatable gas flow controlling axially extending drive stem, characterized in that said, switch includes switch retaining and driving means of the quick attach-detach type encircling and axially movable relative to the stem and retention structure, said driving means being movable with said switch toward the valve and its retention structure detachably to retain the switch in assembled relation to the valve and to connect the driving means to the stem upon axial movement in one direction and to do the reverse upon axial movement in the opposite direction.

4,249,048

PRESSURE SWITCH

Maurice J. Drew, Cylinder, Iowa 50528

Filed Jun. 11, 1979, Ser. No. 47,170
Int. Cl.[3] H01H *35/34*
U.S. Cl. 200—83 F **5 Claims**



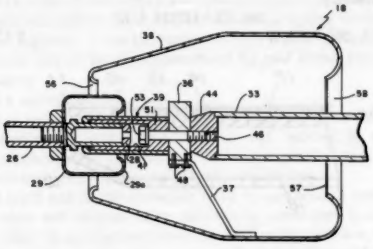
1. A pressure switch, comprising,
a support means,
a guide member mounted on said support means,
a first linkage means received by said guide member for up and down sliding movement therein, said first linkage being restricted by said guide member to axial movement,
a flexible diaphram on said support means in communication with a source of variable pressure conditions,
said first linkage means operatively connected to said diaphram for axial movement in response to movement of said flexible diaphram,
second linkage means pivotally secured to said support means,
cradle means pivotally secured to and supported by each of said first and second linkage means,
a mercury switch mounted in said cradle and having electrodes in one portion thereof and a quantity of liquid mercury therein adapted to electrically connect said electrodes at times,
whereby when low pressure conditions move said flexible diaphram to a first position, said first linkage means will pivot said cradle means and said mercury switch to a first position about and with said second linkage means to cause said liquid mercury to move towards said electrodes to close said mercury switch, and whereby when high pressure conditions move said flexible diaphram to a second position, said first linkage means will pivot said cradle means and said mercury switch to a second position about and with said second linkage means to cause said liquid mercury to move out of contact with said electrodes to open said mercury switch.

4,249,049

HIGH VOLTAGE PLAIN BREAK CIRCUIT INTERRUPTER

William H. Fischer, Pittsburgh; Charles F. Cromer, Trafford; Robert L. Hess, N. Versailles, and Lee E. Berkebile, Pittsburgh, all of Pa., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Dec. 19, 1977, Ser. No. 861,859
Int. Cl.[3] H01H *33/24, 9/48*
U.S. Cl. 200—144 R 7 Claims



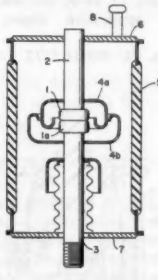
1. A high voltage plain break interrupter comprising: first and second contact means movable toward each other for making electrical contact, said first contact means including a first central main contact portion and a first surrounding concentric substantially cylindrical shield at the same potential as said main contact portion, said second contact means including a second central main contact portion for slidably mating with said first central main contact portion and a second surrounding concentric substantially cylindrical shield at the same potential as said second main contact portion and with a larger diameter than said first cylindrical portion for receiving and surrounding a part of said first cylindrical shield when said main contact portions are slidably mated, said first and second surrounding shields each terminating in a rolled edge which face each other when the interrupter is open whereby critical points of dielectric stress are prevented both during opening and closing.

4,249,050

VACUUM SWITCH

Hiroyuki Okumura, Chigasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Dec. 30, 1977, Ser. No. 865,790
Int. Cl.[3] H01H *33/66*
U.S. Cl. 200—144 B 1 Claim



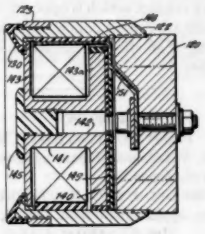
1. In a vacuum switch of the type comprising a vacuum vessel defined by a cylindrical member and end plates sealed to both ends of said cylindrical member, a pair of separable contacts each secured to a rod and disposed in said vacuum vessel, and a pair of opposing shields surrounding said contacts, respectively, said shields having reentrant portions in which said contacts are positioned respectively at an opened state, and the distance between opposing faces of said shields being shorter than the distance between said contacts at the opened state, the improvement in which each of said shields has one end surrounding one of said contacts and the other end secured to a corresponding one of said rods in a manner that the diameters of said shields are designed so that the shield of the stationary side will be positioned inside the other shield at the closed state, and at least a portion of said cylindrical member corresponding to a gap between said shields is made of a transparent material thereby enabling the visual observation of the movement of said contacts inside the vacuum vessel.

4,249,051

ARC SPINNER INTERRUPTER WITH CONTACT FOLLOWER

Gerald A. Votta, King of Prussia, Pa., assignor to Electric Power Research Institute, Palo Alto, Calif.

Filed Mar. 27, 1978, Ser. No. 890,062
Int. Cl.[3] H01H *33/18*
U.S. Cl. 200—147 R 8 Claims



1. In an arc spinner type interrupter; a main stationary contact connected to the first main terminal; a movable contact movable into and out of engagement with said main stationary contact and connected to a second main terminal; a stationary arcing contact ring insulated from said main stationary contact; a winding having one end connected to said stationary arcing contact ring and its other end connected to said first main terminal for cooperating with said stationary arcing contact ring to rotate an arc having a root on the exposed surface of said stationary arcing contact ring to extinguish said arc; and an insulation barrier having the shape of a cylindrical ring and disposed between the exposed surface of said stationary arcing contact ring and the exposed surface of said main stationary contact and interrupting the space between the exposed surfaces of said main stationary contact and said stationary arcing contact, for preventing the transfer at any time of an arc from said stationary arcing contact ring to said main stationary contact.

4,249,052

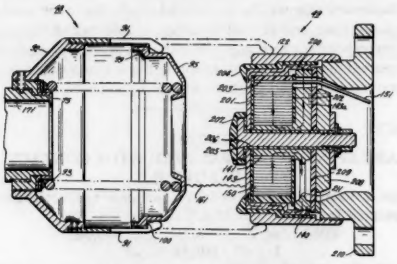
ARC SPINNER INTERRUPTER WITH CHROMIUM COPPER ARCING CONTACT

Gerald A. Votta, King of Prussia, and Donald E. Weston, Lansdale, both of Pa., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed May 1, 1978, Ser. No. 901,567
Int. Cl.[3] H01N *33/18*
U.S. Cl. 200—147 R 13 Claims

1. A circuit interrupter comprising a stationary contact assembly; a movable contact assembly; a dielectric gas filled housing containing said stationary and movable contact assemblies; said stationary contact assembly including an arc runner contact and an electrical coil and circuit connection means for connecting said electrical coil in series with said arc runner contact; said arc runner contact containing, as at least a portion

thereof, a generally flat conductive disk having an axis which is coaxial with the axis of said coil; said coil being disposed adjacent one surface of said arc runner contact and being in a plane parallel to the plane of said arc runner contact and being closely magnetically coupled to said arc runner contact; said movable contact assembly including a generally cylindrical



arcing contact which is coaxial with said arc runner contact, and which is movable into and out of contact with the surface of said arc runner contact which is opposite to said one surface; at least one of said arc runner contact and said movable arcing contact consisting of an alloy of chromium copper to improve interruption ability.

4,249,053

PUSH BUTTON SWITCH

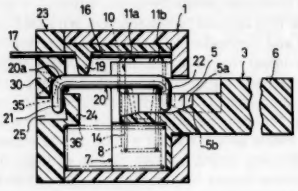
Kotaroh Tsutsui, Yokohama, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Oct. 4, 1979, Ser. No. 81,856

Claims priority, application Japan, Oct. 5, 1978, 53-137164

Int. Cl.³ H01H *3/14*

U.S. Cl. 200—153 J **5 Claims**



1. A push-button switch comprising:

a housing;

a slider having a cam groove for obtaining a tactile feedback feel and movable contact-holding portions;

a return spring for said slider;

movable contacts held in said movable contact-holding portions of said slider and normally biased upwards;

an insulating substrate fixed to said housing and formed with fixed contacts adapted to slidingly engage said movable contacts;

a plurality of terminals extending externally of said housing from said fixed contacts;

a cover member fixed to said housing and provided with first and second fastening portions;

a cam follower having one end thereof supported in a cantilever fashion by said first fastening portion of said cover member and the other end thereof held slidable on said cam groove of slider;

a wire spring supported by said second fastening portion of said cover member and engaging said one end of said cam follower to resiliently hold said cam follower; and

a protuberant strip provided on said insulating substrate and which presses a rear part of said cam follower downwards.

4,249,054

METALLIC HOUSING FOR AN ELECTRONIC APPARATUS WITH A FLAT KEYBOARD

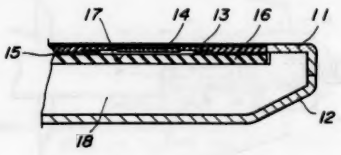
Shigeki Komaki, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 28, 1979, Ser. No. 16,075

Claims priority, application Japan, Feb. 28, 1978, 53/26783[U]

Int. Cl.³ H01H *3/12*

U.S. Cl. 200—159 B **8 Claims**



1. An electronic apparatus with a flat key-board, comprising:

a housing for said electronic apparatus having an upper metallic member which defines said flat key-board and a lower member,

said metallic upper member of said housing, including a plurality of definable movable key actuators in selected regions of the upper surface thereof, and completely integral and continuous therewith said key actuators having a substantially reduced thickness relative to said upper member, thereby making the key actuators movable, relative to said upper member;

a plurality of movable contacts corresponding to respective key actuators for movement in response to the actuation of said key actuators; and

a plurality of stationary contacts corresponding to said movable contacts and accommodated within said housing, whereby a particular one of said movable contacts comes into contact with a particular one of said stationary contacts when a particular one of said key actuators is depressed.

4,249,055

PUSH BUTTON SWITCH

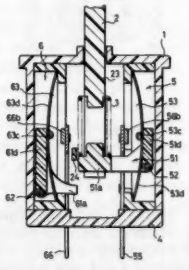
Katsuyuki Matsuo, Iwaki, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed May 23, 1979, Ser. No. 41,814

Claims priority, application Japan, May 25, 1978, 53/70879[U]

Int. Cl.³ H01H *3/12, 5/20*

U.S. Cl. 200—159 B **5 Claims**



1. A push button switch comprising:

a frame; a switch lever; a first switch block accommodated by said frame and including

(a) a carrier plate,

(b) an inversion leaf spring member made of an electrically conductive material and secured to said carrier plate so as to extend in parallel with the direction of movement of said switch lever,

(c) first and second terminals fixed to said carrier plate and adatped to be electrically connected to each other by said inversion leaf spring member, and

(d) an actuator lever pivotally secured to said carrier plate and adapted to press said inversion leaf spring member in response to the movement of said switch lever;

a second switch block accomodated by said frame and including

(a) a second carrier plate,

(b) a second inversion leaf spring member made of an electrically conductive material and secured to said second carrier plate so as to extend in parallel with the direction of movement of said switch lever,

(c) third and fourth terminals fixed to said second carrier plate and adapted to be electrically connected to each other by said second inversion leaf spring member, and

(d) a second actuator lever pivotally secured to said second carrier plate and adapted to press said second inversion leaf spring member in response to the movement of said switch lever, said second actuator lever being positioned downwardly from said actuator lever of said first switch block, and a coiled spring interposed between said switch lever and said actuator lever of said first switch block.

4,249,056

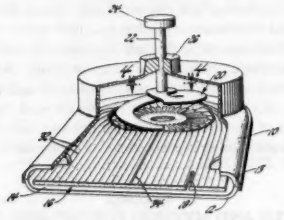
SEQUENTIAL SWITCHING DEVICE

Daniel C. MacManus, Owosso, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 12, 1979, Ser. No. 11,205

Int. Cl.³ H01H *9/00*

U.S. Cl. 200—1 B **4 Claims**



1. A sequential switching device for progressively and serially operating a plurality of switches having a common movable contact, comprising

a rigid insulating support,

a plurality of fixed contacts arcuately arranged in a plane on the support and mounted thereon,

a movable contact comprising a helical spring member mounted with its axis perpendicular to the plane of the fixed contacts, one end of the spring member being secured to the support, the spring member normally being in engagement with one of the fixed contacts and by compression axially movable into progressive electrical engagement with the other fixed contacts to bridge the fixed contacts, the number of said fixed contacts engaged by the movable contact depending on the degree of compression of the helical spring member, and

means for applying a force to the helical spring member to compress it into engagement with the fixed contacts.

4,249,057

CONTROL-KEY SWITCH

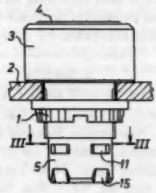
Eberhard Schlegel, and Manfred Krügel, both of Durmentingen, Fed. Rep. of Germany, assignors to Firma Georg Schlegel, Durmentingen, Fed. Rep. of Germany

Filed Oct. 11, 1979, Ser. No. 83,580

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1978, 2844578

Int. Cl.³ H01H *9/00;* **H02B** *1/08*

U.S. Cl. 200—296 **5 Claims**



1. Control-key switch for installation in a control panel or the like, consisting of two parts, that is to say an actuator which is intended to be pushed in the direction of an axis of installation, which is at right angles to a support wall, through this support wall and to be attached to it, and of a counterpart, more particularly a switching device, which can be plugged together with the actuator in the direction of the axis of installation at the inside of the support wall and which is latchable against being pulled back, characterised in that, at the one part (7), locking organs (17) are provided which are elastically resilient in the radial direction and possess hook surfaces (20) extending essentially vertically with respect to the axis of installation (8), and that at the other part (5) support surfaces (12) extending essentially vertically with respect to the axis of installation are provided, behind which the locking organs fall into place during the plugging-together of the parts in such a manner that the hook surfaces rest against the support surfaces when the parts are pulled apart, and that at the other part (5), for each locking organ at least one inclined surface (13) is provided which extends essentially parallel to the axis of installation and that the inclined surfaces, during a relative rotation of the two parts around the axis of installation, deflect the locking organs to such an extent that the hook surfaces and the support surfaces become separated and the parts can be pulled apart.

4,249,058

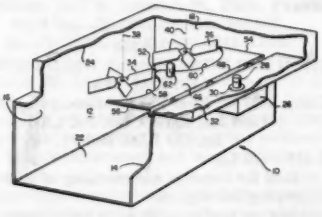
FEED SYSTEM FOR A MICROWAVE OVEN

Ronald R. Lentz, Wayzata, and Eldon J. Klemp, Mayer, both of Minn., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed Jun. 21, 1979, Ser. No. 50,707

Int. Cl.³ H05B *6/74*

U.S. Cl. 219—10.55 F **11 Claims**



1. In a microwave oven including a microwave energy source coupled to a microwave cavity through a feed section,

and a pair of rotating stirrer blades for distributing the microwave energy in said cavity, an improved feed section comprising:

a shelf extending from one wall of said cavity, including means for mounting said microwave energy source to said shelf and propogating microwave energy above said shelf into said cavity;

said shelf having a microwave energy launching portion extending from said one cavity wall towards an opposing cavity wall;

said launching portion not extending beyond one half the distance between said opposing cavity walls and terminating in adjacent perimeter sections each conforming to the respective paths traversed by said rotating stirrer blades.

4,249,059

GAP CONDITION LIGHT INDICATOR SYSTEM FOR ELECTRICAL DISCHARGE MACHINING APPARATUS

Oliver A. Bell, Jr., Statesville; Randall C. Gilleland, Troutman, and Davey J. Chance, Concord, all of N.C., assignors to Colt Industries Operating Corp., New York, N.Y.

Filed Sep. 12, 1977, Ser. No. 832,215

Int. Cl.³ B23P *1/02*

U.S. Cl. 219—69 G **4 Claims**

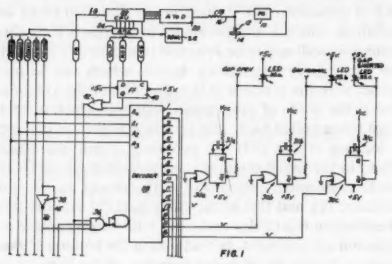


FIG. 1

1. A system for indicating gap machining condition for an electrical discharge machining apparatus, comprising:

a means for sensing gap voltage and providing a first signal representative of gap voltage;

a means for prestoring a pair of reference signals representative of the upper and lower limits, respectively, and thus defining a normal gap voltage cutting range;

a means for comparing said first signal to each of said pair of reference signals, and an array of indicators for providing a visual output representative of the first signal being above, within, or below said range;

said array including at least three indicators arrayed in a vertical display, only the bottom one operated responsive to said first signal being below the normal range and representative of gap short circuit, only the middle one operated responsive to said first signal being within the normal range and representative of normal cutting, and only the top one operated responsive to said first signal being above the normal range and representative of gap circuit.

4,249,060

METHOD FOR INTRAORALLY WELDING DENTAL APPLIANCES

Leigh Colby, 2638 W. River Pkwy., Minneapolis, Minn. 55406

Filed Jan. 8, 1979, Ser. No. 1,537

Int. Cl.³ B23K *27/00*

U.S. Cl. 219—121 LD **3 Claims**

1. A method for intraoral microwelding of intra-oral appliances comprising the steps of:

(a) locating an appliance at an intraoral area where the appliance is to be welded;

(b) irradiating a spot on the appliance to weld the spot with high power radiation provided by a laser with energy between approximately 4 and 8 joules per laser pulse and for a duration of approximately 6 milliseconds; and

(c) focusing said radiation on the spot to an area between approximately 0.010 and 0.015 inches whereby a weld is formed without causing damage to a tooth.

4,249,061

METHOD AND APPARATUS FOR ARC WELDING

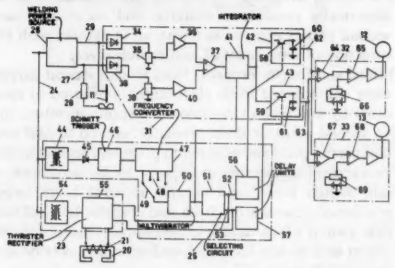
Peter Puschner, Dreiländerweg 127, Aachen-Vaalserquartier, Fed. Rep. of Germany

Continuation of Ser. No. 707,012, Jul. 20, 1976, abandoned. This application Aug. 21, 1978, Ser. No. 935,459

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1975, 2533448; Oct. 20, 1975, 2546894

Int. Cl.³ B23K *9/12*

U.S. Cl. 219—124.22 **17 Claims**



1. A method for translationally adjusting the position of a welding torch with respect to a weld joint formed between two workpieces which comprises, determining operating parameters for an arc burning between the welding torch and a first area of said weld joint, determining operating parameters for an arc burning between the welding torch and a second area of said weld joint, deriving separate characteristic values from said operating parameters determined at each area, mathematically combining said characteristic values, comparing the mathematical combination of characteristic values with a theoretically calculated value for said mathematic combination of said characteristic values, and translationally adjusting the position of said welding torch with respect to said weld joint in accordance with the difference between said mathematical combination of said characteristic values and said theoretically calculated value for said mathematical combination.

4,249,062

APPARATUS AND METHOD FOR SENSING WELDING POINT IN AUTOMATIC WELDING APPARATUS

Keiichi Hozumi, Kobe; Yuji Nishikaichi, Nishinomiya; Masao Ueda, Nishinomiya; Tatsuya Miura, Nishinomiya, and Hirotoshi Yamamoto, Akashi, all of Japan, assignors to Shin Meiwa Industry Co., Ltd., Hyogo, Japan

Filed Jul. 25, 1978, Ser. No. 927,950

Claims priority, application Japan, Mar. 9, 1978, 53-27288; Jun. 13, 1978, 53-71833; Jun. 15, 1978, 53-73004; Jun. 15, 1978, 53-73005; Jun. 15, 1978, 53-73006; Jun. 15, 1978, 53-73007

Int. Cl.³ B23K *9/12*

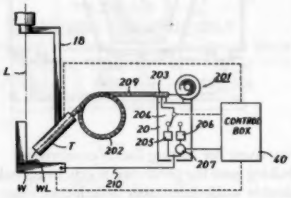
U.S. Cl. 219—124.34 **81 Claims**

1. An automatic welding apparatus for performing welding operations between a welding torch having a tip end and including an electrode, and a workpiece having a welding line, said workpiece being fixed to a workpiece fixture, said welding operation being performed in accordance with a desired relative positional relation between said welding torch and said workpiece fixture, said apparatus comprising:

present positional information generating means operatively connected to said welding torch and said workpiece fix-

ture for generating present positional information representative of the present positions of said welding torch and said workpiece fixture,

control means including storage means for storing command positional information concerning the desired relative positional relation between said welding torch and said workpiece fixture as programmed in advance, said control means being responsive to said command positional information and said present positional information for controlling the relative positional relation between said welding torch and said workpiece fixture to said desired relative positional relation for automatically welding said welding line of said workpiece by means of said electrode of said welding torch,



voltage supply means coupled to said electrode of said welding torch for supplying a voltage to said electrode of said welding torch, said voltage supply means having a sensing mode and a welding mode,

mode selecting means operatively coupled to said voltage supply means for selectively changing the mode of said voltage supply means to a selected one of said sensing mode and said welding mode,

means operatively coupled to said electrode of said welding torch for detecting an electric current conduction state in said electrode in said sensing mode, and

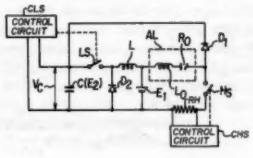
means responsive to the output of said electric current conduction state detecting means for supplying said present positional information of said present positional information generating means to said control means.

4,249,063

CIRCUIT FOR HIGH FREQUENCY ARC WELDING APPARATUS USING A LOW FREQUENCY SWITCH

Hitoshi Kawano; Kiyoshi Ikemura, and Mitsuhiro Hayashi, all of Ise, Japan, assignors to Shinko Electric Co., Ltd., Mie, Japan

Filed Jan. 9, 1979, Ser. No. 2,002
Claims priority, application Japan, Feb. 8, 1978, 53-13890
Int. Cl.³ B23K *9/09*
U.S. Cl. 219—130.51 **6 Claims**



1. A high-frequency arc welding apparatus comprising:

a welding machine having an inductive component;

high-frequency switching means connected in series with the welding machine;

means for connecting the series circuit of the high-frequency switching means and the welding machine across two terminals of a D.C. voltage source to form a closed circuit for conducting welding current;

a first rectifier;

a condenser connected in series with the first rectifier;

means for connecting the series circuit of the first rectifier and the condenser between one terminal of the D.C. voltage source and the junction of the welding machine and the high-frequency switching means to form a closed circuit for the transfer of electrical energy stored in the inductive component of the welding machine to the condenser;

an inductor;

low-frequency switching means connected in series with the inductor;

means for connecting the series circuit of the low-frequency switching means and the inductor between the other terminal of the D.C. voltage source and the junction of the condenser and the rectifier to form a closed circuit for the discharge of electrical energy stored in the condenser;

a second rectifier; and

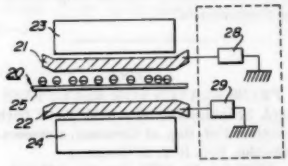
means for connecting the second rectifier between the one terminal of the D.C. voltage source and the junction of the low-frequency switching means and the inductor to form a closed circuit for regenerating in the D.C. voltage source electrical energy stored in the inductor.

4,249,064

HEAT FIXING DEVICE FOR ELECTROGRAPHIC APPARATUS

Shigeru Nakayama, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 3, 1979, Ser. No. 26,761
Claims priority, application Japan, May 29, 1978, 53/63250
Int. Cl.³ H05B *1/00*
U.S. Cl. 219—216 **5 Claims**



1. A heat fixing device for electrographic apparatus comprising a pair of opposed electrically conductive guide members spaced apart from each other to form a feeding path for a record sheet, and at least one heat supply source for fixing a toner image formed on the record sheet by electrically charged thermoplastic particles by fusing, characterized by comprising an electrical means for reducing an attractive force produced between at least that guide member which is opposed to the toner image formed on the record sheet on the one hand and the record sheet on the other hand.

4,249,065

BIRD CAGE HEATER

James F. Malone, 5429 N. Lawrence St., Phila., Pa. 19120

Filed Dec. 19, 1977, Ser. No. 861,897
Int. Cl.³ H05B *1/02, 3/02;* A01K *45/00*
U.S. Cl. 219—220 **4 Claims**

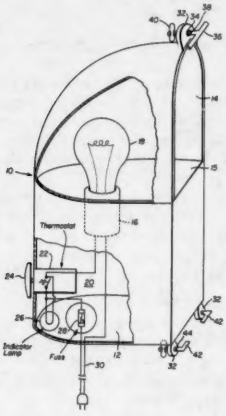
1. Apparatus for heating birds in bird cages or the like, comprising:

a heat and light reflective housing, said housing comprising a hollow elongated structure divided by a partition into an upper lamp compartment and a closed lower control compartment;

the upper compartment having a light bulb mounted therein for producing heat and light, and having reflective internal walls and an open front wall through which the heat and light can exit from the upper compartment;

the housing further having fastening devices for detachably

mounting the housing entirely on the exterior of a bird cage with the open front wall of the upper compartment facing the interior of the cage so that the heat and light produced by the light bulb can be reflected through the open front wall of the upper compartment into the cage when the housing is mounted on the cage; and,



electrical circuit means, disposed in the lower control compartment, for supplying energy to the light bulb, including a thermostat arranged to energize and de-energize the light bulb in accordance with the temperature in the lower control compartment.

4,249,066

PRESS PLATEN FOR BELT PRESS

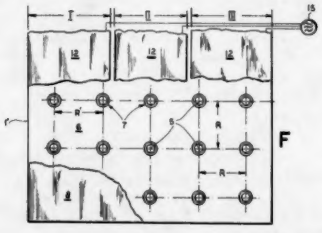
Rolf Eberhard, Schalksmühle-Heedfeld, and Ulrich Maiwurm, Iserlohn, both of Fed. Rep. of Germany, assignors to Wagener & Co., Schwelm, Fed. Rep. of Germany

Filed Jul. 26, 1978, Ser. No. 927,970

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1977, 2734252

Int. Cl.³ H05B *1/00*

U.S. Cl. 219—243 **9 Claims**



1. A press platen comprising:

a thermally conductive and rigid press plate;

a thermally conductive and rigid heater plate having a surface juxtaposed closely with said press plate in heat-conducting relationship and formed with a generally regular array of recesses spaced apart in two generally perpendicular directions and opening at said surface;

a heater capsule in each of said recesses; and

means for passing electricity through each of said capsules for heating same and thereby heating said press plate.

4,249,067

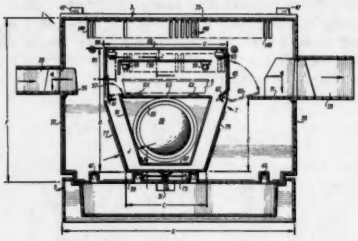
TOY ELECTRIC CONVECTION OVEN

Charles A. Cummings, 3492 Cheviot Ave., Cincinnati, Ohio 45211

Filed Jan. 12, 1979, Ser. No. 2,894

Int. Cl.³ H05B *3/00*

U.S. Cl. 219—392 **7 Claims**



1. A toy oven for baking foods comprising:

(a) a baking pan for receiving foods to be baked;

(b) a double walled chamber defining an outer baking chamber between said walls with input and output doors disposed in opposite sides thereof a configuration sufficient to allow the entrance therethrough of said baking pan to the space between said double walls;

(c) the inner of said double walls defining a heating chamber and a horizontal baking shelf means for supporting said pan between said double walls and extending from said input door through said baking chamber to said output door;

(d) a single electric light bulb for said oven disposed within said heating chamber below said horizontal baking shelf for providing heat for baking said foods there being a convection current flow path from below said baking shelf through the space thereover;

(e) means venting to the atmosphere the areas of said baking chamber above said horizontal shelf means; and

(f) shell means surrounding said baking chamber and including input and output shelf means.

4,249,068

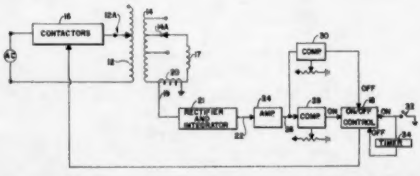
METHOD AND APPARATUS FOR CONTROLLING HEAT ENERGY OF A BONDING TRANSFORMER

John P. Mangan, Iselin, and Edward D. Riordan, South Somerville, both of N.J., assignors to Joyal Products, Inc., Linden, N.J.

Filed Sep. 28, 1978, Ser. No. 946,639

Int. Cl.³ H05B *1/02*

U.S. Cl. 219—497 **10 Claims**



1. Apparatus for controlling the amount of heat energy supplied to a workpiece including coil windings by a bonding transformer having primary and secondary windings to heat said coil windings to a predetermined temperature level for fusing said coil windings into an integral mass, comprising means for connecting said workpiece in series to the secondary windings of said bonding transformer, means for continuously and directly monitoring the current level delivered to said workpiece to provide a signal representative of the current in

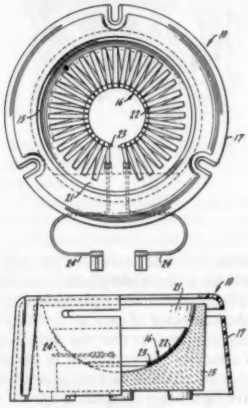
said workpiece, means for presetting the output voltage of said bonding transformer to a substantially constant value while said current level is being monitored, means for providing a reference signal level corresponding to a current level in said workpiece at which said coil windings will manifest a desired temperature, comparator means for receiving said signal from said monitoring means and for comparing said signal to said reference signal which corresponds to said desired temperature level, and means responsive to an output of said comparator means indicative that said signal from said monitoring means is no longer greater than said reference signal level for controlling said bonding transformer to terminate a further application of current to said workpiece.

4,249,069

FLASK HEATER ASSEMBLY

M. Leland Andersen, Loveland, Colo., assignor to Hach Chemical Company, Loveland, Colo.

Filed Mar. 3, 1978, Ser. No. 883,206
Int. Cl.³ H05B *3/58*
U.S. Cl. 219—535 **1 Claim**



1. An electrical heating assembly for a flask having a liquid holding, substantially spherical body, the combination comprising, a heat resisting block having a semi-circular hollow contoured to receive said flask body, a flat ribbon of electrical resistance heated, flexible metal folded in overlapping, offset zig-zag fashion to define an elongated flat band of overlapped ribbon that is bent into an approximate circle and fitted in said hollow so as to conform with the shape of both said hollow and said flask body, said ribbon having an outer electrically insulating layer, means for electrically coupling the ends of said ribbon to a source of electrical current so as to heat said ribbon and a flask in contact with said ribbon, said bent and fitted ribbon defining a band closely and resiliently fitted against a lower band-like portion of a flask body, and said ribbon being folded over a wire at one edge of said band with said wire being formed in a substantial circle to hold the bent and fitted ribbon in substantially circular position.

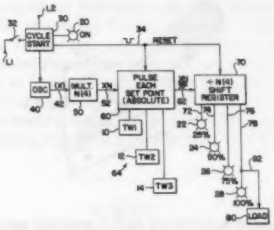
4,249,070

COUNTER/TIMER WITH INCREMENTAL INDICATORS

David D. Miller, Blue Grass, Iowa, assignor to Gulf & Western Manufacturing Company, New York, N.Y.

Filed Sep. 29, 1978, Ser. No. 947,200
Int. Cl.³ G06M *3/02*
U.S. Cl. 235—92 T **5 Claims**

1. A timer for timing to an adjustable selected time, said timer including means for creating timing pulses at a counting rate N times the rate necessary to obtain a given number of said pulses in said selected time, said given number being a digital representation of said selected time; changeable counter means for counting to said digital representation of said selected time in repeating succession, said counter means including means for creating a signal upon each successive counting to said digital representation; means for counting said successive counting signals; means responsive to said signal counting



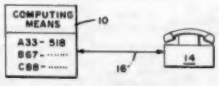
means for creating an output signal when N successive signals are counted; manual display means for directly changing said digital representation to change the lapsed time before said output signal; a plurality of two state indicator elements and means for changing the state of one of said elements upon creation of each of said signals.

4,249,071

METERING SYSTEM

Luther G. Simjian, Lago Mar Pl., 1750 S. Ocean La., Fort Lauderdale, Fla. 33316

Filed Feb. 27, 1979, Ser. No. 15,588
Int. Cl.³ G06F *15/20, 15/30;* G06K *19/06;* D06F *39/00*
U.S. Cl. 235—375 **10 Claims**



1. The method of updating a metering device of the postage meter type or similar type comprising:

providing a code bearing means having a first and a second code;

transmitting the first code from said code bearing means to a computing means and said computing means being programmed for providing in response to the receipt of said first code a third code which has a predetermined correlation with said second code;

entering said third code on said code bearing means, and

providing cooperative relation between said code bearing means and said metering device for causing said metering device to be in condition for being updated responsive to said second code and said third code being in said predetermined correlation.

4,249,072

METHOD OF CORRECTING ERRONEOUSLY ENCODED OPTICAL CHARACTER RECOGNITION ENCODING

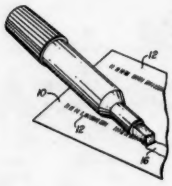
William B. Buros, Scottsdale, Ariz., assignor to Micr-Shield Co., Phoenix, Ariz.

Filed Jun. 13, 1979, Ser. No. 48,240
Int. Cl.³ G06K *19/06, 7/10*
U.S. Cl. 235—491 **6 Claims**

1. In an optical character recognition system using encoding indicia formed from ultraviolet light excitable ink arranged in an encoded format on a document to be machine read, a method for correcting an erroneously encoded document

having erroneously encoded indicia thereon, comprising the steps:

a. applying a ferric chloride solution, having from 1% by weight to 10% by weight of ferric chloride, to the erroneously encoded indicia of said document;



b. drying said solution on said document; and

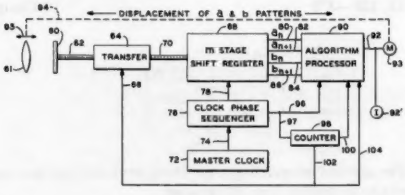
c. re-encoding said document over said erroneously encoded indicia by applying new encoding indicia, formed from ultraviolet excitable ink, on an area of said document containing dried solution.

4,249,073

METHOD AND APPARATUS FOR DETERMINING FOCUS POSITION

Norman L. Stauffer, Englewood, and Dennis J. Wilwerding, Littleton, both of Colo., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 1, 1979, Ser. No. 16,595
Int. Cl.³ G01J *1/36*
U.S. Cl. 250—204 **25 Claims**



1. Apparatus for use with an auto focus system which includes lens means that produces first and second radiation patterns of a scene, and first radiation detector means responsive to the first radiation pattern to produce a first output signal in accordance therewith and second radiation detector means responsive to the second radiation pattern to produce a second output signal in accordance therewith, said first and second output signals being similar and in a first position with respect to each other when the lens means is at a proper focus position, the first and second output signals moving away from the first position in a first direction when the lens means moves away from the proper focus position on a first side, the first and second output signals moving away from the first position in a second direction opposite to the first direction when the lens means moves away from the proper focus position on a second side opposite to the first side, the improvement comprising:

means detecting the slope of a portion of at least one of the first and second output signals and producing a first resultant signal in accordance therewith;

means detecting the difference in magnitude of the first and second output signals and producing a second resultant signal in accordance therewith; and

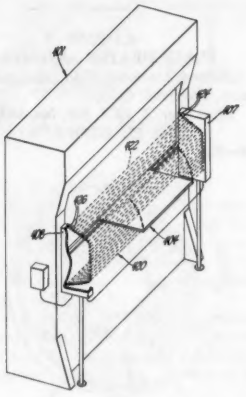
further means receiving the first resultant signal and the second resultant signal to produce a product signal which has a first sign when the first and second output signals are away from the first position in the first direction and which has a second sign when the first and second output signals are away from the first position in the second direction.

4,249,074

INTRUSION DETECTOR FOR PRESS BRAKE

John F. Zettler, Stow, Mass., and Harold F. Twyman, Birmingham, Mich., assignors to Xenex Corporation, Birmingham, Mich.

Filed Jun. 6, 1978, Ser. No. 913,253
Int. Cl.³ H01J *39/00*
U.S. Cl. 250—221 **7 Claims**



1. In an intrusion detection system of the type including a plurality of light beam sources and photodetectors arranged in plural sets with a light source and a photodetector in each set, the source and photodetector of each set defining a light beam channel and being disposed so that the light beam from the source impinges upon the photodetector in the absence of an obstruction in the beam channel, said plural sets being arranged with the respective light beam channels in spaced relation with each other and defining a screen of predetermined configuration, means for cyclically energizing each of the light beam sources to produce repeated light pulses in each channel with the light pulses occurring successively in the successive channels, means coupled with the photodetectors for producing a signal having successive cycles with each cycle corresponding to one of the channels, each cycle including a signal pulse corresponding to a respective light pulse in the absence of an obstruction in the corresponding channel, and signal pulse detection means coupled with the last mentioned means, the improvement wherein said pulse detection means comprises first means for storing a first state signal having one state if any one of said cycles includes a signal pulse and having another state if said one of said cycles does not include a signal pulse and for storing a second state signal having said one state if the cycle immediately succeeding said one cycle includes a signal pulse and having said another state if the cycle immediately succeeding said one cycle does not include a signal pulse, and second means coupled with said first means for producing a first control signal.

4,249,075

DETECTION OF BIRDSWING DEFECTS IN GLASS CONTAINERS

Sam Lovalenti, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Nov. 20, 1978, Ser. No. 962,428
Int. Cl.³ G01N *21/51*
U.S. Cl. 250—223 B **1 Claim**

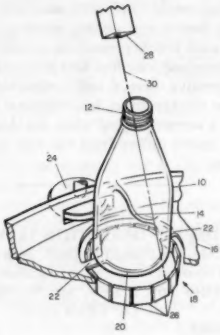
1. Apparatus for inspecting hollow, transparent glass con-

tainers having a neck opening for "birdswing" defects comprising:

means for supporting a container on its base at an inspection station;

a light source for generating a beam of light, means mounting said light source such that said light beam passes through the neck opening of said container and impinges on a predetermined portion of the inner sidewall thereof;

means at said inspection station for causing relative movement of said container and said beam of light so that the beam scans the predetermined portion of the inner side wall thereof; and



a plurality of photocells adjacent said container and arranged in a circumferential array having a diameter larger than the container beneath said container for detecting light which is scattered outwardly through the wall of said container after impinging on a birdswing, said array being generally coaxial with respect to the vertical axis of said container.

4,249,076

OPTICAL MEASURING DEVICE USING OPTICAL FIBERS

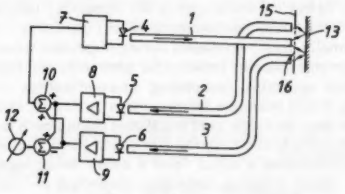
Jan Bergstrom; Hans Bertilson, both of Lund; Torgny Brogardh, and Anders Persson, both of Vasteras, all of Sweden, assignors to ASEA Aktiebolag, Vasteras, Sweden

Filed Nov. 17, 1978, Ser. No. 961,847

Claims priority, application Sweden, Nov. 23, 1977, 7713207; May 30, 1978, 7806189

Int. Cl.³ G01D *5/34*

U.S. Cl. 250—227 **15 Claims**



1. Optical measuring device for measuring physical magnitudes, comprising:

a sensor actuated by the physical magnitude to be measured;

means for generating optic input signals to said sensor;

means for processing optic output signals emanating from said sensor and including at least two optical detection means;

at least one optical input fiber for transmitting said optic input signals to said sensor and at least two optical output fibers for transmitting said optic output signals to said at least two optical detection means;

said sensor including means for modulating at least a portion of the light conducted thereto such that said optic output signals contain at least one measuring component representative of the magnitude to be measured and at least one stabilizing component with a smaller dependence on said physical magnitude than said measuring component; and

said means for processing further including means for separating said at least one measuring component and said at least one stabilizing component, and means for generating therefrom at least one measuring signal and at least one compensating signal, and means responsive to said at least one compensating signal for reducing the dependence of said measuring signal on instabilities in the the measuring device.

4,249,077

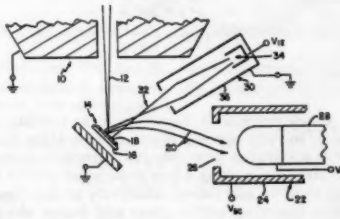
ION CHARGE NEUTRALIZATION FOR ELECTRON BEAM DEVICES

Charles K. Crawford, c/o Kimball Physics, Inc., Kimball Heights, Wilton, N.H. 03086

Filed Aug. 4, 1978, Ser. No. 931,141

Int. Cl.³ G01N *23/00*

U.S. Cl. 250—306 **3 Claims**



1. In an electron beam device of the type in which a narrowly defined electron beam is swept over a target, the improvement comprising a positive ion source arranged to supply positive ions to said target and thereby neutralize negative charges on said target resulting from impingement of said electron beam thereon.

4,249,078

ARRANGEMENT FOR THE PRODUCTION OF ELECTRORADIOGRAPHIC X-RAY PHOTOGRAPHS

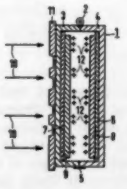
Gottfried Lange, Erlangen, and Hans Heinrich, Buckenhof, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 27, 1979, Ser. No. 34,121

Claims priority, application Fed. Rep. of Germany, May 5, 1978, 2819864

Int. Cl.³ G03G *13/00, 15/00*

U.S. Cl. 250—315.2 **9 Claims**



1. An arrangement for the production of electroradiographic x-ray photographs wherein a photoconductive exposure plate has a chargeable surface, which can be electrically charged, is

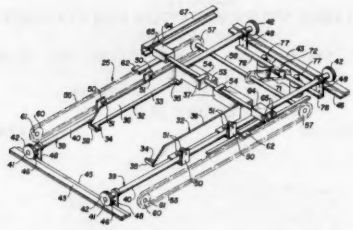
exposed in an image chamber to the influence of a radiation image from which a charge image is to be formed, characterized in that, opposite the chargeable surface, an additional surface is disposed, the two surfaces being at least approximately similar in charge retention characteristics, and further characterized in that the two surfaces are the free surfaces of respective photoconductive layers of xeroradiographic exposure plates which are known per se.

4,249,079

FRONT AND BACK LOADING DUAL CASSETTE SIZE SPOT FILMER

Eugene P. Thomas, Baltimore, Md., assignor to CGR Medical Corporation, Baltimore, Md.

Filed Jun. 25, 1979, Ser. No. 51,502
Int. Cl.³ G03B *41/16*
U.S. Cl. 250—468 **20 Claims**



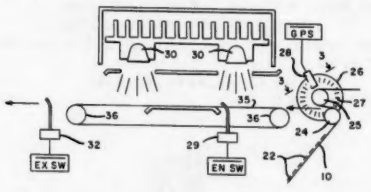
1. A spot filmer for a diagnostic X-ray machine comprising a pair of laterally opposed film cassette holding frames, means to drive said frames forwardly and rearwardly in unison and to guide said frames along a first orthogonal path of movement, means to drive said frames selectively in one direction or in opposite directions and to guide said frames along a second orthogonal path of movement, and access means near the opposite limits of movement of said frames along said first orthogonal path to facilitate front or back loading of film cassettes in two sizes into said frames.

4,249,080

JAM-SENSING SYSTEM AND APPARATUS

Wayne W. Pritchett, Newtown, and Henry Bleggi, Fairfield, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Feb. 2, 1979, Ser. No. 8,825
Int. Cl.³ B65H *7/00*
U.S. Cl. 250—557 **12 Claims**



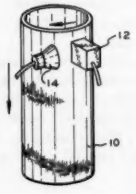
1. An apparatus for conveying one or more articles on a conveyor surface along a predetermined path and for providing a signal indicative of any variation in the location of each said article relative to said conveyor surface, comprising a conveyor surface adapted to support one or a succession of spaced articles for movement along said predetermined path, means for moving said conveyor surface along said path, means for supplying one or a succession of spaced articles to said moving surface, pulse-supplying means associated with said conveyor surface to provide a series of pulses having a variable frequency proportional to the rate of movement of said conveyor surface, pulse storage means associated with said pulse-supplying means for providing a delay signal when a predetermined number of pulses are received from said pulse-supplying means representative of the movement of said conveyor surface a distance equivalent to a predetermined length of said path, entrance sensing means adapted to detect the movement of each article on said conveyor surface into said predetermined length of said path and to cause said pulse storage means to begin storing the pulses received from said pulse-supplying means until each said article passes said entrance sensing means, exit sensing means adapted to sense the movement of each article present on said conveyor surface out of said predetermined length of said path and to provide an exit signal representative thereof, and comparing means associated with said pulse storage means and with said exit sensing means for providing a warning signal when the delay signal from the pulse storage means differs from the exit signal from the exit sensing means.

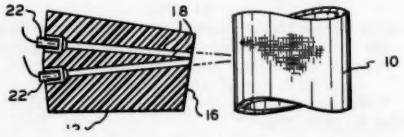
4,249,081

DEFECT DETECTION SYSTEM

Frederick A. Cole, and Ronald L. Deak, both of Jackson, Mich., assignors to Sparton Corporation, Jackson, Mich.

Filed Nov. 1, 1979, Ser. No. 90,335
Int. Cl.³ G01N *21/88*
U.S. Cl. 250—563 **7 Claims**





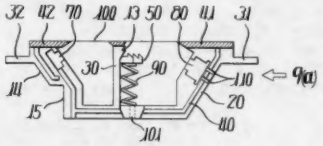
1. A defect detection system for inspecting tubular fabric wherein the fabric tube rotates about its longitudinal axis and is substantially axially translated during inspection wherein relative movement occurs between the fabric tube and fixed defect detection apparatus, comprising, in combination, electronic sensing means sensing a fabric portion having an axial length greater than the fabric axial translation during each revolution for detecting a defect in the fabric and having an electrical output producing a signal upon a defect being sensed, electronic signal counting apparatus connected to said output receiving and counting signals from said sensing means, timing apparatus associated with said signal counting apparatus whereby the number of signals produced within a predetermined interval of time can be determined, control apparatus connected to said signal counting and timing apparatus producing a control output signal upon a predetermined number of defect signals occurring while a predetermined time interval and defect indentification means incorporated into said signal counting apparatus, said defect identification means recognizing repetitive defect signals within a given time interval to produce a single signal for defect determination purposes.

4,249,082

PHOTOELECTRIC SMOKE SENSOR BOX

Yasugi Kakigi, and Takao Kakigi, both of Tokyo, Japan, assignors to Cybernet Electronics Corporation, Kawasaki, Japan

Filed Sep. 19, 1978, Ser. No. 943,620
Claims priority, application Japan, Sep. 20, 1977, 52/126611[U]; Oct. 17, 1977, 52/138824[U]
Int. Cl.[3] G01N *15/06*
U.S. Cl. 250—574 8 Claims



1. A smoke detector housing for a photoelectric smoke detector, comprising:

a housing structure including sidewalls, an end wall and an annular base with a central opening therethrough, defining a smoke chamber, said side walls having openings therethrough for permitting entry of smoke into the chamber but blocking incident light therefrom; and

a sensor box sealingly fitted into the central opening of the annular base for supporting a light source and light detected means in a position having fields of view through the central opening and intersecting in the chamber;

said sensor box comprising two mating half portions with interfitting projection and recess means on confronting peripheral edge surfaces thereof, said half portions each having recesses therein to support a light source and a light detecting means in said positions, one of said half portions having a top wall extending toward and into sealing contact with the other half portion, said top wall having a pair of spaced openings therethrough in registry with the respective fields of view of the light source and light detecting means, said interfitting projection and recess means defining end walls and a bottom wall, a partition wall extending transversely between the half portions between the light source and light detecting means to prevent light from passing through the interior of the sensor box directly to the light detecting means, a spring stop formed in the sensor box at the partition wall, a spring in the sensor box engaged with the stop, and an opening in the bottom wall of the sensor box for receiving a test rod therethrough for insertion into the fields of view of the light source and light detecting means to simulate the presence of smoke particles, the spring engaging the test rod to normally urge it to a position out of the field of view of the light source and light detecting means.

4,249,083

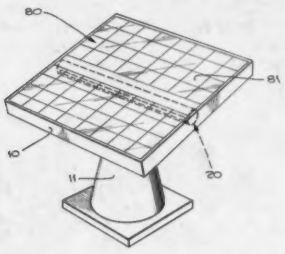
SOLAR ELECTRICAL GENERATOR

Jack G. Bitterly, 4723 Vista De Oro Ave., Woodland Hills, Calif. 91364

Filed Oct. 5, 1978, Ser. No. 948,677
Int. Cl.[3] F03G *7/02*
U.S. Cl. 290—1 R 34 Claims

1. In an engine comprising a turbine and a boiler, the boiler having at least one boiler wall, heating means for heating the boiler for converting a liquid working fluid in the boiler to gas, the improvement comprising:

mounting means for mounting the turbine within the boiler such that the boiler and the turbine rotate relative to each other and shroud means in the housing for directing the gas to the turbine, and condensing means downstream of the turbine for cooling the working fluid and converting it back to liquid and pump means downstream of the condensing



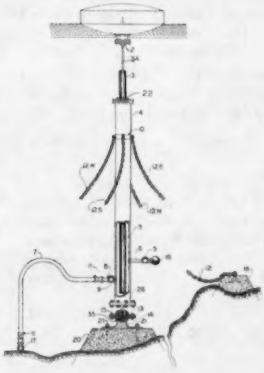
means for interjecting the working fluid between the shroud and the wall of the boiler.

4,249,084

SCHEME FOR HARNESSING HYDROUNDULATORY POWER

Juan T. Villanueva, 105 Apo St., Sta Mesa Heights, Quezon City, and Manuel I. Felizardo, 156 Luna Mencias St., San Juan, Rizal, both of Philippines

Continuation of Ser. No. 704,867, Jul. 13, 1976, abandoned. This application Jul. 24, 1978, Ser. No. 927,089
Claims priority, application Philippines, Oct. 8, 1975, 17638
Int. Cl.[2] F03B *13/12*
U.S. Cl. 290—53 7 Claims



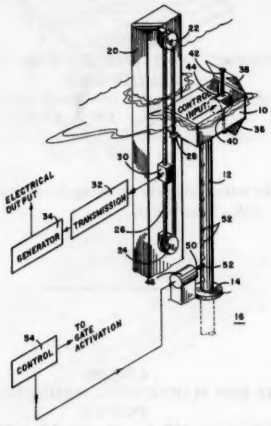
1. In a system for punping water by wave action having a floating buoy, means to anchor the buoy, a pump disposed between the buoy and the anchor means, said pump having a piston actuated by movements of the buoy to pump water, the improvement comprising, said buoy shaped to orient itself for vertical motion without substantial pitching to wave action in any direction having a shallow dish shaped underbody with circular water lines throughout its entire immersed depth, a central protuberance in the lower center of said underbody having an area for the placement of ballast, wherein a vertical cross-section through the center of said buoy defines a symmetrical buoy hull shape, and a universal joint coupling said protuberance to said pump.

4,249,085

TIDE OPERATED POWER GENERATING APPARATUS

Harvey Z. Kertzman, 806 W. Roxbury Pkwy., Brookline, Mass. 02167

Filed Jul. 16, 1979, Ser. No. 57,604
Int. Cl.[3] F03B 13/12
U.S. Cl. 290—53 5 Claims



1. Tide operated power generating apparatus comprising in combination:

a. a hollow float;

b. means for constraining the lateral movement of said float whereby said float will rise vertically with the incoming tide and fall vertically with the outgoing tide;

c. filling means for admitting water to the interior of said float during the incoming tide;

d. emptying means for releasing said water from the interior of said float during the outgoing tide; and

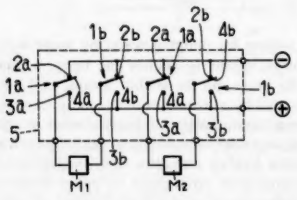
e. means for connecting said float to a power generating device whereby said device is operated by the rise of said empty float during the incoming tide and the fall of said filled float during the outgoing tide.

4,249,086

VEHICULAR SIDE MIRROR CONTROL

Asaji Mochizuki, Kawasaki, Japan, assignor to Showa Musen Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 2, 1979, Ser. No. 274
Claims priority, application Japan, Nov. 2, 1978, 53/150332[U]
Int. Cl.[3] G02B 5/08
U.S. Cl. 307—10 R 3 Claims



1. A vehicular side mirror control comprising:

two drive sources rotating a vehicular side mirror in vertical and horizontal directions, respectively,

forward and reverse drive electric circuits for each of said drive sources,

a forward drive switch in said forward drive electric circuit for driving the associated drive source in the forward direction and

a reverse drive switch in said reverse drive electric circuit for driving the associated drive source in the reverse direction, said switches being in the form of a push button-operated switch wherein each of said switches comprises;

a first pair of positive stationary contacts,

a first movable contact piece normally separated from said first pair of stationary contacts,

a second pair of netative stationary contacts, one contact in each of said first and second pairs of stationary contacts being connected to either terminal of the associated drive source,

a second movable contact piece normally in contact with said second pair of negative stationary contacts and a spring-loaded push button normally urging said second movable contact piece to contact said second pair of stationary contacts and adapted to cause said first movable contact piece to contact said first pair of stationary contacts and separate said second movable contact piece from said second pair of stationary contacts when said push button is depressed down to thereby drive the associated drive source in either direction; and

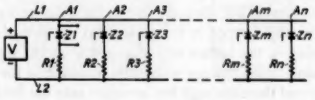
a common printed circuit board wherein said first pair of positive contacts are formed on one surface of said common printed circuit board and said second pair of negative stationary contacts are formed on another surface of said common printed circuit board.

4,249,087

POWER SUPPLY ARRANGEMENT FOR A NUMBER OF FUNCTIONAL UNITS DISTRIBUTED ALONG A TRANSMISSION LINE

Kjell G. Sundberg, Kungsängen, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Nov. 24, 1978, Ser. No. 963,207
Claims priority, application Sweden, Dec. 30, 1977, 7714977
Int. Cl.[3] H02J 1/04, 1/06
U.S. Cl. 307—35 4 Claims



1. A power supply arrangement in a transmission system with a number of functional units distributed along a long transmission line which units obtain their power supply from a power supply unit located at one end of the transmission line in such a way that each functional unit gets its power supply from a constant voltage circuit connected across the branches of the line and where the functional units can assume a first functional state with low current consumption and a second functional state with a considerably higher current consumption, characterized in that the power supply (V) comprises a current limited constant voltage unit in which the voltage at an output limit current exceeding the sum of all the functional units' currents in the first state is drastically reduced with an increasing current, said constant voltage circuit (Z1, R1-Z_n, R_n) comprising a constant voltage unit (Zener diode Z6) connected in series with an adjustable constant current circuit (T1,T2,24,25), by means (T4,T5,VR) for alternatively adjusting said constant current circuit at said low or high current consumption, for sensing the voltage drop across the constant current circuit when the current consumption is high and for increasing the current through the constant current circuit further when said voltage drops exceeds a certain limit, caus-

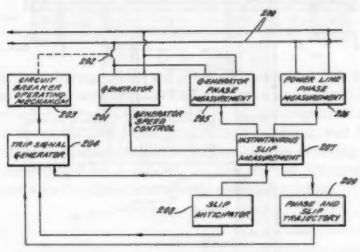
ing the current limitation of the power supply unit to start functioning and lower the output voltage to an acceptable value.

4,249,088

AUTOMATIC DEVICE FOR SYNCHRONIZATION OF PRIME MOVER WITH ELECTRICAL GRID

Ronald J. Kleba, Schenectady, N.Y., and Stanislaw H. Bednarski, Tripoli, Libya, assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 19, 1979, Ser. No. 58,901
Int. Cl.³ H02J 3/08
U.S. Cl. 307—87 **8 Claims**



1. An automatic device for ensuring synchronization between the output voltage and an electrical generator and the voltage of a line to which the generator is to be connected at the instant of closure of a circuit breaker which connects said electrical generator to said power line; said circuit breaker having an energizable closing circuit which causes the closing of the circuit breaker contacts after some delay time; said automatic device comprising:

first phase sensor means for sensing the instantaneous phase of the voltage of said generator;

second phase sensor means for sensing the instantaneous phase of the voltage of said power line;

slip determining means connected to said first and second phase sensor means for developing signals related to the slip between the instantaneous phases of said power line and said generator output voltages;

trajectory determining means for determining the trajectory of slip and phase to anticipate the expected slip and phase at times in the future;

signal output means responsive to said first and second phase sensor means, said slip determining means and said trajectory determining means for delivering a signal to said circuit breaker energizable closing circuit to initiate closing of said circuit breaker upon the simultaneous occurrence of the following three conditions: (1) at an instant the instantaneous phase and slip are within given limits, (2) the phase and slip expected at the instant of breaker closure are with given limits and (3) when the phase and slip are optimal for their particular trajectory.

4,249,089

SHORT-TERM POWER DROPOUT ARRANGEMENT USEFUL IN A TELEVISION RECEIVER

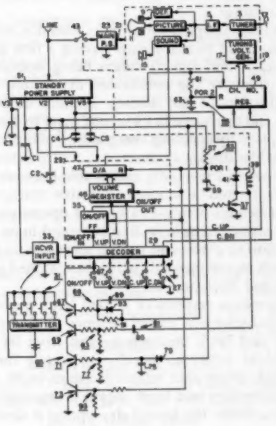
James J. Wolford, and John B. George, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Jun. 27, 1979, Ser. No. 52,660
Int. Cl.³ H01H 83/00
U.S. Cl. 307—140 **5 Claims**

1. In a system including power supply means for normally developing operating voltages for said system, the development of at least one of said operating voltages by said power supply means being subject to interruptions during power line dropouts, memory means for storing a binary signal having first and second levels corresponding to on and off operating conditions, respectively, of said system during the presence of said one of said operating voltages, control means for establishing said on and off operating conditions of said system in response to said binary signal, and user responsive input means connected between a first circuit point and said memory means for selectively applying a predetermined voltage developed at said first point to said memory means, said binary signal being alternately set to said first and second levels when said predetermined voltage is sequentially applied to said memory means by said input means, apparatus for returning said system after said power line dropouts to the prior one of said first and second operating conditions prevailing at the onset of said power line dropouts, comprising:

storage means for selectively developing an enabling signal in response to said first level of said binary signal during the presence of said one of said operating voltages and for storing said enabling signal for a first predetermined time interval after the beginnings of said power line dropouts; and

switch means including first and second normally non-conductive devices connected in series between said first point and a second point between said input means and



said memory means for selectively applying said predetermined voltage to said memory means when said first and second devices are both conductive, said first device of said switching means being conditioned to be conductive in response to said enabling signal;

said switching means further including pulse generating means coupled to said power supply means for generating a pulse signal at the ends of said power line dropouts, said second device of said switching means being conditioned to be conductive in response to said pulse signal;

said switching means further including resetting means coupled to said memory means for setting said binary signal to said second level in response to the development of a predetermined level of said one of said operating voltages after the ends of said power line dropouts;

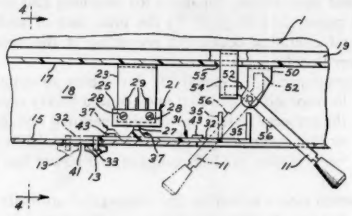
said switching means further including inhibiting means for inhibiting said first and second devices of said switching means from being conductive except during a second predetermined time interval after said binary signal is reset to said second level after the ends of said power line dropouts.

4,249,090

AUTOMATIC RESETTING POWER SAVER SWITCH FOR DISHWASHER

Donald S. Cushing, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Apr. 20, 1979, Ser. No. 31,793
Int. Cl.³ B08B *3/10, 13/00*
U.S. Cl. 307—154 **3 Claims**



1. A switch and latch arrangement for a washing appliance of the type incorporating a heating element and providing the operator a choice of two dry cycle options, a non-heated dry option and a heated dry option, said switch and latch arrangement comprising:

switch means adapted for serial connection with the heating element, said switch means having a first state and a second state; said switch means being operative in its first state to enable the non-heated dry option by preventing energization of the heating element during the drying cycle and operative in its second state to enable the heated dry option by enabling energization of the heating element during the drying cycle;

selection means manually switchable between a first operative state and a second operative state; said selection means being operative in its first operative state to place said switch means in its first state and in its second operative state to place said switch means in its second state;

door latch means movable between a latched position and an unlatched position; and

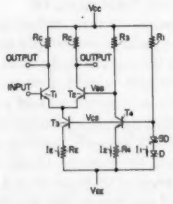
resetting means responsive to said latch means for assuring that said selection means assumes its first operative state when said latch means is moved from its latched to its unlatched position, thereby requiring the operator to manually place said selection means in its second operative state after said latch means is returned to its latched position when the heated dry option is desired.

4,249,091

LOGIC CIRCUIT

Akira Yamagiwa, Ohiso, Japan, assignor to Hitachi, Ltd., Japan

Filed Sep. 6, 1978, Ser. No. 940,009
Claims priority, application Japan, Sep. 9, 1977, 52-107799
Int. Cl.³ H03K *19/086, 19/003*
U.S. Cl. 307—203 **10 Claims**



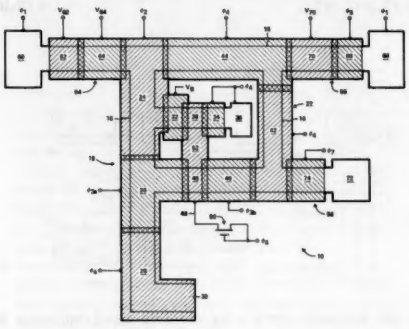
1. A logic circuit including emitter-coupled transistors, the base of one of which being supplied with an input signal, the base of the other being served with a voltage; a regulation transistor for regulating the emitter current of said coupled transistors, a biasing means having a series connection of a junction diode and a Schottky diode, said means generating a predetermined voltage between the emitter and the base of said regulation transistor; and an output terminal being coupled to at least one collector of the transistors.

4,249,092

CCD FREQUENCY DIVIDER CIRCUIT

Reginald A. Allen, Los Angeles, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Oct. 9, 1979, Ser. No. 83,042
Int. Cl.³ G11C *19/28;* **H01L** *29/78*
U.S. Cl. 307—221 D **22 Claims**



1. A circuit comprising:

a semiconductor substrate storage means in said substrate having an input and being capable of containing a predetermined quantity of charge and of transferring charge therethrough;

output means in said substrate coupled to said storage means for providing an output signal when said predetermined quantity is received therefrom and for transferring charge therethrough when the charge received is less than said predetermined quantity;

drain means in said substrate for removing excess charge;

charge sensing means having a master electrode and a slave electrode, said master electrode being responsive to charge in excess of said predetermined quantity at said storage means, and being operative to transfer said excess charge to said drain means;

feedback means in said substrate coupled between said slave electrode and said input for circulating charge, said slave electrode transferring charge through said output means to said feedback means when no excess charge is being transferred through said master electrode, and serving as a barrier for charge at said output electrode means when excess charge is present at said master electrode,

whereby when a quantity of charge less than said predetermined quantity is at said input, it is circulated through said output means, said slave electrode and said feedback means to said input, and when said quantity is combined at said input with additional charge such that said predetermined quantity is exceeded, the excess charge is removed through said master electrode said drain means, and said predetermined quantity is provided as an output signal from said output means.

4,249,093

MULTIPLE REQUEST ARBITRATION CIRCUIT

Sammy S. Henig, Clifton, N.J., assignor to Lockheed Electronics Co., Inc., Plainfield, N.J.

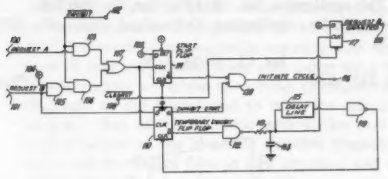
Filed Sep. 6, 1978, Ser. No. 940,304
Int. Cl.³ H03K *5/22*
U.S. Cl. 307—232 **13 Claims**

1. A multiple request arbitration circuit comprising;

means for detecting the occurrence of a plurality of input

signals, each input signal representing a request to be granted by the arbitration circuit; and,

means responsive to the detecting means for granting the request represented by one of the input signals and for denying the requests represented by the remaining input signals upon the occurrence of the one input signal prior



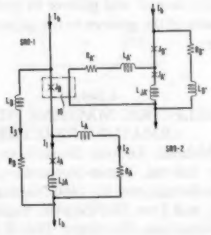
to the occurrence of the remaining input signals and also upon the occurrence of the one input signal a first predetermined interval subsequent to the occurrence of any one of the remaining input signals, said granting and denying means including means for delaying the granting of said one request by a second predetermined interval subsequent to the detection of said one input signal.

4,249,094

RELAXATION OSCILLATION LOGIC IN JOSEPHSON JUNCTION CIRCUITS

Theodore A. Fulton, Warren Township, Somerset County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 1, 1978, Ser. No. 965,327
Int. Cl.[3] H03K *19/195, 19/20*
U.S. Cl. 307—277 **6 Claims**



1. A superconductive circuit (SRO-1) comprising

first and second Josephson junction gates (J_A and J_B) connected in series with one another, each of said gates having a current voltage characteristic including a zero voltage state and a finite voltage state and an unstable regime in which relaxation oscillations can occur,

a first resistive-inductive shunt (R_A, L_A) connected in parallel with said first gate so as to form a first output loop, a branch of said first loop forming a first output line (R_A, L_A or J_A, L_{JA}),

a second resistive-inductive shunt (R_B, L_B) connected in parallel with the series combination of said first and second gates,

conductor means (**20**) for applying DC current from DC bias means (I_b) to said gates,

the resistances of said first and second shunts and the current of said applying means biasing said first and second gates into their unstable regimes where each can undergo relaxation oscillations, so that, in the quiescent state of said circuit, said first gate (J_A) is undergoing relaxation oscillations when said second gate (J_B) is in its zero voltage state, and

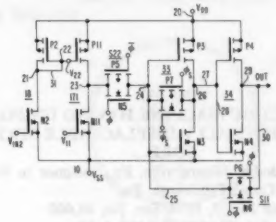
control means (SRO-2) for switching said second gate (J_B) to its finite voltage state, thereby causing relaxation oscillations in said first gate (J_A) to cease.

4,249,095

COMPARATOR, SENSE AMPLIFIER

Sheng T. Hsu, Lawrenceville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 26, 1979, Ser. No. 15,247
Int. Cl.[3] H03K *17/56;* **H03F** *3/45*
U.S. Cl. 307—350 **7 Claims**



1. A voltage comparator circuit comprising:

first and second complementary field effect transistors having respective gate and drain and source electrodes;

means connecting the respective drain electrodes of the first and second transistors to a first node;

means for applying supply potential between the source electrodes of the first and second transistors;

means for applying first and second voltages to be compared to the gate electrodes of the first and second transistors respectively;

bistable circuit means having an input circuit for setting or resetting said bistable means without loading its input signal source; and

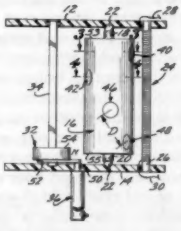
means for selectively connecting the first node to the input circuit of said bistable circuit.

4,249,096

ELECTRICAL DYNAMO

Barbara Hickox, P.O. Box 781, Ventura, Calif. 93001

Filed Apr. 23, 1979, Ser. No. 32,145
Int. Cl.[3] H02K *33/00*
U.S. Cl. 310—15 **13 Claims**



1. An electrical generator comprising

at least one non-conductive cylinder mounted for rotation about an axis, and containing a plurality of longitudinally spaced pairs of permanent magnets mounted therewithin angularly offset from each other in a helical array, the magnets in each pair being radially disposed in said cylinder diametrically opposite each other and separated from each other at the cylinder axis with like poles facing each other,

at least one secondary having electrical leads across which current is generated,

at least one ring magnet having an axis parallel and proximate to said cylinder, and

means for reciprocating said ring magnet along its axis.

4,249,097

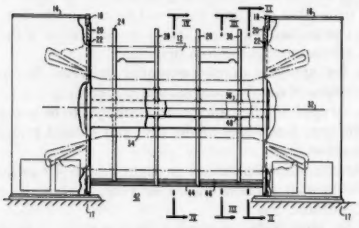
DYNAMOELECTRIC MACHINE HAVING UNIFORMLY CIRCUMFERENTIALLY DISPLACEABLE STATOR CORE

Richard A. Gronholm, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 7, 1979, Ser. No. 46,600

Int. Cl.[3] H02K *5/24, 1/12*

U.S. Cl. 310—51 7 Claims



1. A dynamoelectric machine comprising:

stator core;

a plurality of bore rings surrounding said stator core at selected axial locations, said locations including both axial ends and position intermediate thereto;

end box structures disposed on opposite ends of said stator core, each end box structure including support rings for supporting said stator core;

a first plurality of springs extending independently at each side of said stator core within the horizontal center plane thereof to independently interconnect the bore rings with said end box support rings, said springs occupying first and second positions, said springs providing a radial resilience to the stator core to isolate core vibrations and tangential rigidity to resist short circuit torque, each of the springs occupying a first position being joined to at least one axially end-disposed bore ring, each of the springs occupying a second position being joined to at least one axially intermediately disposed bore ring and extending independently of said axially end-disposed bore rings; and

a stabilizer structure constituting a second plurality of springs extending independently below the stator core within the vertical center plane thereof to independently interconnect the bore rings with said end box support rings, said springs occupying third and fourth positions, said springs providing a radial resilience to the stator core to isolate core vibrations and tangential rigidity to resist short circuit torque, said spring occupying said third position being joined to at least one axially end-disposed bore ring, said spring occupying said fourth position being joined to at least one axially intermediately disposed bore ring and extending independently of said axially end-disposed bore rings.

4,249,098

SQUIRREL-CAGE ROTOR STRUCTURE FOR AN ASYNCHRONOUS ELECTRICAL MOTOR

Urs Karlen, Fislisbach, and Horst Kirschner, Birr, both of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

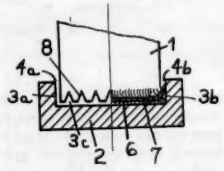
Continuation of Ser. No. 519,845, Oct. 31, 1974, abandoned.

This application Jun. 29, 1976, Ser. No. 700,785

Claims priority, application Switzerland, Nov. 15, 1973, 16099/73

Int. Cl.[3] H02K *3/20*

U.S. Cl. 310—183 1 Claim



1. In a rotor component of an asynchronous electrical motor, said rotor being of the squirrel-cage type comprising a cylindrical array of circumferentially spaced rectangularly configured conductor bars having the opposite ends thereof short-circuited by connection to electrically conductive end rings and wherein the conductor bars are also secured to a laminated iron core on the rotor, the improvement wherein each end ring has an annular configuration provided with an annular groove receiving the corresponding end portions of the conductor bars, the end faces of said conductor bars having a tooth-like profile throughout the length thereof, and hard solder connections joining the base of said groove to said end faces and also joining the flanks of the groove to the adjacent side faces of the conductor bars.

4,249,099

DYNAMOELECTRIC MACHINE WITH REDUCED ARMATURE REACTION

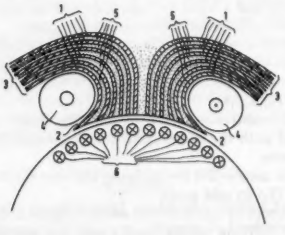
Wisnu Bhongbhibhat; Andreas Boehringer, both of Stuttgart; Hans-Dieter Schmid, Tamm-Hohenstange; Siegfried Haussmann, Steinenbergstrasse 11, 7400 Nürtingen, all of Fed. Rep. of Germany, and Ivan Ilic, Zagreb, Yugoslavia, assignors to Siegfried Haussmann, Nürtingen, Fed. Rep. of Germany

Filed Oct. 6, 1978, Ser. No. 949,211

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1977, 2745516; Jul. 7, 1978, 2833168

Int. Cl.[3] H01J *17/04*

U.S. Cl. 310—218 26 Claims



1. In a dynamo-electric apparatus having an axis of rotation, and an exciter field structure, a field winding (4) on said field structure and generating an excitation field, and an armature (6) generating, in operation, an armature reaction magnetomotive force,

wherein said exciter field structure comprises

field poles (2) and yokes (3) connecting the poles, said structure being formed by a plurality of stacked iron lamina (1) arranged parallel to said axis of rotation, and,

to reduce the effect of the armature reaction, layers of substantially non-magnetic material (5) disposed between sequential ones of said iron lamina which have a thickness throughout the entire extent of the yoke (3) of up to, and in the same order of magnitude as the thickness of the lamina thereof to magnetically separate said sequential ones of said iron lamina from each other by a distance which is up to, and of the same order of magnitude as the thickness of the lamina and to raise the reluctance to magnetic flux of the magnetic path within said exciter field structure to the armature reaction magnetomotive force due to current flow in said armature and to form composite cores;

whereby the so-separated lamina form composite poles (2) and composite yokes (3), sequential ones of said poles being separated from each other by pole gaps.

4,249,100

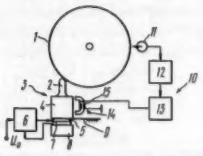
DRIVE MEANS AND FORCE CONTROL FOR PIEZOELECTRIC VIBRATION MOTOR

Petr E. Vasiliev, ulitsa Ugnyagyasju, 9, kv. 17; Prantsishkus-Algirdas R. Klimavichjus, ulitsa Zhirmunu, 117, kv. 34; Alexandr V. Kondratiev, prospekt Kosmonavtov 43, kv. 72; Juozas J. Matsjukyavichjus, ulitsa Vesulo, 3, kv. 12; Gabrieljus-Vitautas L. Beksha, ulitsa Karalinishkju, 24, kv. 11, and Vitautas A. Kaminskas, ulitsa Pyarkuno, 10, kv. 203, all of Vilnjus, U.S.S.R.

Filed Apr. 12, 1979, Ser. No. 29,490

Int. Cl.³ H01L *41/08*

U.S. Cl. 310—317 **13 Claims**



1. A vibration motor comprising:

an electric oscillator provided with a sync input, a control input and an output;

a working piezoelectric cell connected with said output of said electric oscillator and generating ultrasonic vibrations;

a feed-back piezoelectric cell in contact with said working piezoelectric cell and connected with said sync input of said electric oscillator;

a concentrator of ultrasonic vibrations including a first stage contacting one of said piezoelectric cells, capable of taking up said vibrations and a second, driving stage designed to intensify said vibrations;

a rotor having a surface contacting said driving stage of said concentrator and being set to rotation by said vibration; and

means for control of rotation frequency of said rotor by changing the force pressing said concentrator to said surface of said rotor which includes a rotation frequency pickup with an output; a frequency discriminator provided with an input and output and connected at the input with said outr ut of said pickup; a controllable d-c power supply source having an input and an output and connected at the input with said output of said frequency discriminator; and an electromagnet provided with a winding and an armature, said winding being connected with said output of said power supply source and said concentrator being employed as said armature.

4,249,101

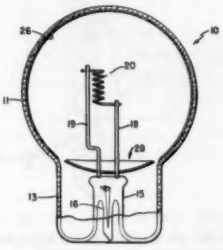
INCANDESCENT LAMP WITH INFRARED REFLECTING-VISIBLE ENERGY TRANSMITTING COATING AND MISALIGNED FILAMENT

Peter Walsh, Stirling, N.J., assignor to Duro-Test Corporation, North Bergen, N.J.

Filed Oct. 18, 1978, Ser. No. 952,267

Int. Cl.³ H01K *1/18, 1/32*

U.S. Cl. 313—112 **11 Claims**



1. An incandescent electric lamp comprising:

an envelope having a curved surface portion,

filament means mounted within said envelope,

means for supplying electrical current to said filament to cause it to incandesce to emit energy in both the visible and infrared ranges,

means on substantially the entire curved surface portion of said envelope for reflecting at least an average in excess of about 60% of the energy over the infrared range produced by said filament incident thereon and for transmitting therethrough an average in excess of about 60% of the visible range energy incident thereon produced by said filament,

said envelope having the major part of the curved surface portion optically shaped for the infrared energy reflecting means to reflect infrared energy from the filament incident thereon back toward said filament, each part of said filament being deliberately located outside of the direct optical image of the filament formed by the curved surface reflecting portion of the envelope such that a substantial portion of the infrared energy emitted by a respective part of the filament returns to said part after at least two reflections from the envelope to raise the operating temperature of the filament with the major portion of the visible energy being transmitted through said infrared energy reflecting means on the first incidence thereon in accordance with the transmissivity to visible range energy of said reflecting means.

4,249,102

HALOGEN-METAL VAPOR DISCHARGE LAMP

Rudolf Krieg, Munich; Alexander Dobrusskin, Taufkirchen, and Horst Krense, Ottobrunn, all of Fed. Rep. of Germany, assignors to Patent-Treuhand-Gesellschaft für elektrische Gluehlampen mbH, Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 788,363, Apr. 18, 1977, abandoned. This application Oct. 31, 1978, Ser. No. 956,343

Claims priority, application Fed. Rep. of Germany, May 4, 1976, 2619674

Int. Cl.³ H01J *61/18*

U.S. Cl. 313—116 **23 Claims**

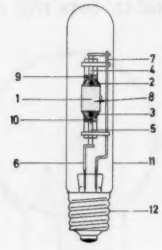
1. A halogen-metal vapor discharge lamp having a good color rendition including low color temperature with good luminous efficacy comprising

an evacuated light transmissive envelope surrounding a light transmissive arc tube,

said arc tube enclosing a pair of electrodes and containing a fill material wherein, in accordance with the invention,

(a) said fill material comprises metal halides and at least one rare earth metal halide in an amount sufficient to provide an essentially saturated vapor fill during operation of the lamp; and

(b) at least portions of said light transmissive tube which, in operation of the lamp, are cooler than other portions



of said tube are formed with, light energy absorbent surface characteristics and comprising portions which are roughened or frosted, to cause, during operation of said lamp due to absorption of light energy by said frosted portions an increase in the temperature of said portions and a consequent rise in vapor pressure in the lamp and rise in the temperature of the metal halide—rare earth halide fill material to a higher temperature resulting in an increase vapor pressure, and in light output of lower color termperature at good luminous efficacy and improved color rendition.

4,249,103

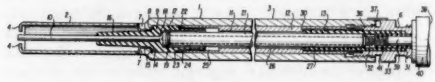
BREECH-ASSEMBLED IGNITER DEVICE

Thomas D. Farrell, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 2, 1979, Ser. No. 8,935

Int. Cl.[3] **H01T** *13/02, 13/56*

U.S. Cl. 313—135 **1 Claim**



1. A breech-assembled igniter device comprising:

a unitary conductive tubular shell having body and spark electrode sections disposed at opposite ends thereof, an internal shoulder adjacent the juncture of said sections, inwardly extending tabs on the outer end of said electrode section, and an internal thread at the breech end of said body section.

an electrode assembly removably positioned in said shell and comprising an electrode insulator positioned in said shell and having a counter-bored central bore, a pair of longitudinally spaced external shoulders one of which abuts said internal shoulder adjacent said juncture, an elongated spark electrode held in said central bore of said electrode insulator and protruding from the end thereof to the end of said spark electrode section of said shell for defining a spark gap with said tabs, a terminal extension bearing an insulative coating and positioned in said shell with an end retained in the counter-bore of said electrode insulator in electrical contact with the inner end of said shell about said spark electrode, a retaining sleeve positioned in said shell about said terminal extension and engaging the other of said shoulders on said electrode insulator for positioning said electrode insulator against said internal shoulder in said shell, said retaining sleeve having an intermediately located internal shoulder, and an insulative sleeve positioned between said terminal extension and said retaining sleeve, and abutting said internal shoulder therein for being predeterminedly located in said electrode assembly with the outer end of said insulative sleeve positioned outwardly of the outer end of said terminal extension,

and an end coupling threadedly positioned in the breech end of the body section of said shell and bearing on the outer end of said retaining sleeve for holding same and said electrode insulator in operative positions and for capturing said insulative sleeve in a predetermined position in said electrode assembly, and said coupling being removable for enabling breech assembly and disassembly of parts in said shell, being externally threaded for enabling an electrical connection thereto, and being tubular for permitting electrical connection therethrough to said terminal extension.

4,249,104

SELF SHIFT TYPE GAS DISCHARGE PANEL

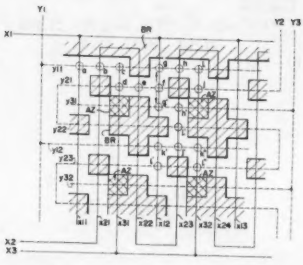
Tsutae Shinoda, Akashi; Kazuo Yoshikawa, and Shizuo Andoh, both of Kobe, all of Japan, assignors to Fujitsu Limited, Tokyo, Japan

Filed Aug. 26, 1977, Ser. No. 828,295

Claims priority, application Japan, Sep. 16, 1976, 51/111573; Oct. 5, 1976, 51/120142

Int. Cl.[3] **H05B** *37/00*

U.S. Cl. 313—188 **20 Claims**



1. A self shift type gas discharge panel, said panel having at least two intersecting shift channels for shifting at least one discharge spot along row and column directions, said panel comprising:

a pair of opposing substrates defining a gas discharge space therebetween;

a least two buses provided on each said substrate;

a number of pluralities of electrodes formed on each said substrate, said number of electrode pluralities on each said substrate being equal to the number of said buses on the same said substrate, and each said electrode on each of said substrates having at least one portion opposing a portion of at least one electrode on the other of said substrates;

means for connecting all the electrodes of each of said pluralities of electrodes on each said substrate respectively to one of said buses on the same said substrate;

a discharge point defined between each opposing pair of said opposing portions of said electrodes on said opposing substrates;

at least one array of said discharge points arranged along each of said row and column directions, and

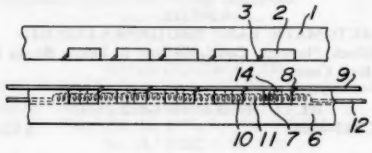
said at least two intersecting shift channels defined by said at least one array, and by said means for connecting said buses to said electrodes, to allow shifting of said at least one discharge spot selectively along said intersecting shift channels.

4,249,105

GAS-DISCHARGE DISPLAY PANEL

Takeo Kamegaya, Tokyo; Hideomi Matsuzaki, Hatano; Ryuichi Kaneko, Kawasaki, and Minori Yokozawa, Sagamihara, all of Japan, assignors to Nippon Hoso Kyokai, Japan

Filed Sep. 27, 1978, Ser. No. 946,334
Claims priority, application Japan, Oct. 3, 1977, 52-117901
Int. Cl.[3] H01J *61/067*
U.S. Cl. 313—213 8 Claims



1. A gas discharge display panel comprising a front wall, a rear wall fluid sealed to said front wall, at least one of said front and rear walls being transparent, a plurality of gas-discharge cells arranged in a matrix between said front and rear walls, each of said cells including at least a pair of electrodes consisting of an anode and a self heating cathode which are spaced from one another by a gas-discharge path, and a gas filling said discharge cells, said gas including components selected from the group consisting of xenon, krypton and argon, said cathode having a small heat capacity and small heat conductivity and comprising an elongated wiry metal formed as one of a coil, a twisted wire and a wire mesh and having a surface coated with an electron emission material selected from a group of an azide of an alkali earth metal, a boride of an alkali earth metal and a boride of a rare earth metal which belongs to a group of lanthanum and having a work function less than 3.5 electron volts, said cathode being self heated by bombardment of ions generated from a discharge current which is less than a few milliamperes by a gas discharge across said anode and cathode.

4,249,106

RADIATION SENSITIVE SCREEN

Eiichi Maruyama, Kodaira; Saburo Ataka, Hinodemachi; Kiyohisa Inao, Mobara; Yoshinori Imamura, Hachioji; Toshihisa Tsukada, Sekimachi; Yukio Takasaki, Hachioji, and Tadaaki Hirai, Koganei, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Nov. 7, 1979, Ser. No. 92,021
Claims priority, application Japan, Nov. 8, 1978, 53-136805; Jan. 31, 1979, 54-10059[U]
Int. Cl.[3] H01J *29/45*
U.S. Cl. 313—365 7 Claims

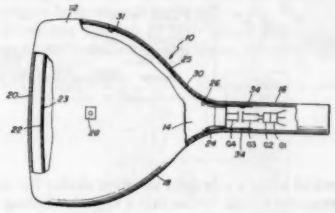
1. A radiation sensitive screen comprising a crystalline silicon substrate which is located on a side of incidence of radiation, and an amorphous silicon film which contains hydrogen therein and which is located on a side of said substrate opposite to said side of the incidence of the radiation.

4,249,107

CATHODE RAY TUBE HAVING AMORPHOUS RESISTIVE FILM ON INTERNAL SURFACES AND METHOD OF FORMING THE FILM

Kurt B. Kilichowski, Burlington, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Division of Ser. No. 634,675, Nov. 24, 1975, Pat. No. 4,092,444.
This application Dec. 29, 1977, Ser. No. 865,629
Int. Cl.[3] H01J *29/88, 29/94*
U.S. Cl. 313—479 4 Claims



1. In a cathode ray tube having an evacuated tube including an envelope having a neck portion and electron gun positioned in the neck portion to provide a beam of electrons for impingment on a target forming a part of the tube, the gun including a plurality of electrodes operating at varying potentials, the neck portion including an interior surface portion adjacent to the electrodes, the electrodes and the potentials being such that an arc discharge may occur between electrodes of varying potentials, the improvement comprising:

(a) an amorphous, resistive thin film deposited on the interior surface of the neck portion adjacent to the electrodes, the film consisting of a mixture of graphite and oxides of heavy metals selected from the group consisting of antimony and tin and combinations thereof, the amorphous film having an electrical resistance ranging from 10^3 to 10^8 ohms, and having good adhesion and scratch resistance qualities without a binder.

4,249,108

LAMG ALUMINATE PHOSPHORS ACTIVATED BY EUROPIUM AND LAMPS INCORPORATING SAME

Robert W. Wolfe, Wysox, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Filed Nov. 30, 1979, Ser. No. 99,064
Int. Cl.[3] C09K *11/46*
U.S. Cl. 313—486 4 Claims

1. A blue-emitting divalent europium activated lanthanum magnesium aluminate luminescent phosphor composition exhibiting a multiphase structure of either magneto plumbite and alpha alumina phases or magneto plumbite, alpha alumina and spinel phases and having the molar formula of

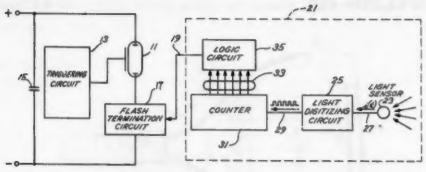
$$La_xMg_yAl_{11}O_{16.5+y+(3x/2)}$$

where x lies between 0.351 and 0.750 and y lies between 0.351 and 0.750; said phosphor composition exhibiting a greater brightness than the corresponding divalent europium activated lanthanum magnesium aluminate luminescent phosphor composition having the molar formula $LaMgA_{11}O_{19}$.

4,249,109
LIGHT DIGITIZING CIRCUIT FOR AN ELECTRONIC FLASH DEVICE

Francis T. Ogawa, Jefferson County, Colo., assignor to Rollei of America, Inc., Littleton, Colo.

Filed Jan. 4, 1979, Ser. No. 999
Int. Cl.³ H05B *41/32*; G08C *9/06*
U.S. Cl. 315—151 **23 Claims**



1. A method using a sole light sensitive device for converting light received by the device into a digital pulsating signal, comprising the steps of:

generating a signal using said sole sensitive device, having magnitude representative of the light intensity received by said device;

transducing said signal to a time period over which said signal represents receipt of a predetermined magnitude of light energy;

transducing said signal to a time period over which said signal represents receipt of a predetermined magnitude of light energy beginning from completion of said first named time period;

performing successive repetitions of said last two named steps; and

generating a pulse signal train responsive to said successive repetitions, including;

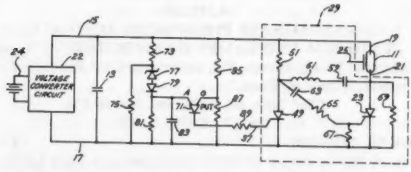
(1) establishing the width of each successive pulse of said train according to respective said first named time periods; and

(2) establishing the time between successive pulses according to respective said second named time periods.

4,249,110
CONTROLLED ENERGY CUT-OFF FOR AN ELECTRONIC FLASH DEVICE

John D. Dick, Thiensville, Wis., assignor to Rollei of America, Inc., Littleton, Colo.

Filed Jan. 4, 1979, Ser. No. 1,016
Int. Cl.³ H05B *41/29*
U.S. Cl. 315—241 P **7 Claims**



1. A flash device comprising:

flash means electrically actuable for producing a photographic flash;

storage capacitor means for powering said flash means;

voltage converter circuitry for charging said capacitor means to a relatively high voltage level;

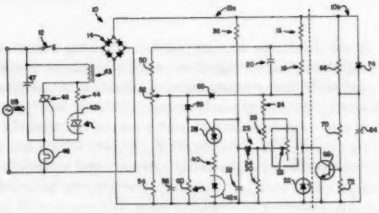
voltage monitoring means for monitoring the voltage developed across said capacitor means during actuation of said flash, said voltage monitoring means including means for electrically establishing a voltage value representative of the discharge cut-off voltage level for said capacitor means, said means establishing said voltage value at a value which varies in relation to the voltage developed across said capacitor means immediately prior to flash actuation, said voltage monitoring means for generating an electrical signal when the monitor voltage substantially equals said established cut-off voltage level; and

means connected to said voltage monitoring means for extinguishing said flash means responsive to said electrical signal.

4,249,111
AUTOMATIC LAMP SHUTDOWN CIRCUIT

Julius Gluck, Norwalk, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Aug. 20, 1979, Ser. No. 67,861
Int. Cl.³ H05B *37/00*; G03B *27/72*
U.S. Cl. 315—360 **6 Claims**



1. In an electrophotocopying machine having a reciprocating carriage for supporting original documents to be copied, a lamp for illuminating said original documents, an automatic lamp shutdown circuit, comprising:

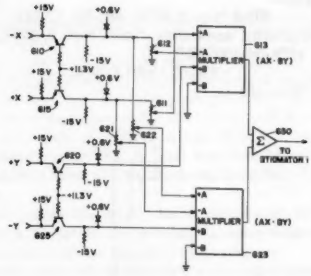
a line-voltage compensation control circuit for said lamp, said control circuit including a voltage source; and

an automatic shutdown circuit operatively connected to said voltage source for turning the lamp off after the lamp has been on for a pre-determined amount of time.

4,249,112
DYNAMIC FOCUS AND ASTIGMATISM CORRECTION CIRCUIT

Barry A. McKibben, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Sep. 18, 1979, Ser. No. 76,533
Int. Cl.³ H01J *29/58*
U.S. Cl. 315—382 **5 Claims**



1. An astigmatism correction voltage generating system for correcting astigmatism in the corners of a cathode ray tube screen, the system comprising:

a source of horizontal deflection signals;

a source of vertical deflection signals;

first and second limiting amplifiers coupled to receive said horizontal deflection signals;

third and fourth limiting amplifiers coupled to receive said vertical deflection signals;

a first four quadrant multiplier coupled to receive the output of said first, said second, and said third limiting amplifiers;

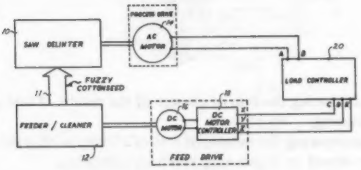
a second four quadrant multiplier coupled to receive the output of said first, said second, and said fourth limiting amplifiers; and

a summing amplifier coupled to receive the output of said first and said second four quadrant multipliers and to produce a correction voltage therefrom.

4,249,113
LOAD CONTROLLER

John W. Werner, Lubbock, Tex., assignor to Brandon and Clark Electric Company, Inc., Lubbock, Tex.

Filed Jul. 25, 1977, Ser. No. 818,654
Int. Cl.³ B23Q *5/10, 5/28*
U.S. Cl. 318—39 **22 Claims**



1. In a processing system having

a. a processing machine,

b. a feeder for feeding material to the processing machine,

c. a process drive connected to the processing machine,

d. a drive power required by the process drive being related to a process load placed on the process drive,

e. a feed drive connected to the feeder,

f. a feed rate from the feeder to the processing machine having an effect on the process load,

g. the feed rate being directly related to the speed of the feed drive,

h. the speed of the feed drive being controlled by varying a feed voltage thereto, and

j. a drive sensor connected to the process drive for measuring the drive power;

the improved load controller for regulating the process load comprising in combination with the above:

k. translation means electrically connected to the drive sensor and to the feed drive for producing a plurality of preset feed voltages corresponding to a plurality of ranges of measured drive power, whereby when the measured drive power falls within a given range the feed rate corresponds to the preset feed voltage for that particular range of measured drive power, said translation means including means for setting and measured drive power ranges.

4,249,114
ELECTROMECHANICAL ENERGY CONVERTER

Alexandr D. Popov, pereulok Rynochny, 44; Vladimir A. Solomin, ulitsa Dachnaya, 14, kv. 31, both of Rostov-na-Donu; Vladimir A. Trofimov, selo Balakleya, pereulok Tikhy, 8, Cherkasskaya oblast; Alexandr I. Mishkovich, RIIZhT, 5, kv. 21, Rostov-na-Donu; Vyacheslav A. Ponomarev, ulitsa Privokzalnaya, 23, kv. 11, Azov, and Sergei I. Leschen, ulitsa Lermontovskaya, 125/135, kv. 64, Rostov-na-Donu, all of U.S.S.R.

Filed Jan. 8, 1979, Ser. No. 1,417
Claims priority, application U.S.S.R., Mar. 20, 1978, 2587752
Int. Cl.³ H02K *41/00*
U.S. Cl. 318—115 **1 Claim**

1. An electromechanical energy converter connected to an a.c. power source and comprising:

a linear induction motor;

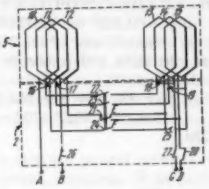
a switching assembly;

an inductor of said linear induction motor;

transversal laminations of said inductor of said linear induction motor; slots in each of said transversal laminations of said inductor of said linear induction motor, the number of said slots in each of said transversal laminations being at least twelve;

distributed windings arranged on said transversal laminations of said inductor of said linear induction motor; sections of said distributed windings connected to said switching assembly; each of said distributed windings having at least six said sections;

said distributed winding of each of said transversal laminations of said inductor of said linear induction motor, connected to said switching device connecting it to all phases of said a.c. power source to enable a transversal movement and switching, to enable a longitudinal movement, said distributed windings so as to connect one of said distributed windings of one of said transversal laminations to one phase of the a.c. power source and said distributed windings of subsequent said transversal laminations to the other phases of said a.c. power source;



a secondary element of said linear induction motor;

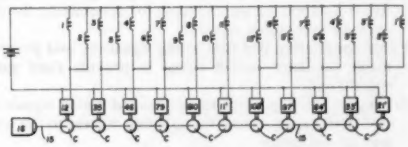
a magnetically conductive base of said secondary element of said linear induction motor;

an electrically conductive part of said secondary element of said linear induction motor arranged on said magnetically conductive base of said secondary element of said linear induction motor.

4,249,115
MAGNETIC APPARATUS FOR PRODUCING MOVEMENT

J. William Putt, 1162M S. Cedar Crest Blvd., Allentown, Pa. 18103

Continuation-in-part of Ser. No. 758,227, Jan. 10, 1977, Pat. No. 4,121,139, which is a continuation-in-part of Ser. No. 634,568, Nov. 24, 1975. This application Oct. 16, 1978, Ser. No. 951,710
Int. Cl.³ H02K *33/16*
U.S. Cl. 318—134 **15 Claims**



1. Apparatus for producing movement of a driven body, comprising,

a first set of intermediate paramagnetic members for producing movement of the driven body in a first direction,

a second set of intermediate paramagnetic members for producing movement of the driven body in a second direction which is opposite to said first direction,

at least one stationary paramagnetic member, at least one driven paramagnetic member connected to the driven body, said driven and stationary members being disposed where each said set of intermediate members has a driven

member at one end thereof and a stationary member at the opposite end thereof,

said intermediate members being aligned with their respective driven member and being movable from mutually proximate relative positions to mutually distant relative positions where they are separated by gaps, means for limiting the size of said gaps to prevent excessive separation between adjacent members, and

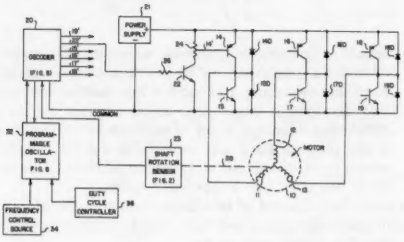
energizing means for alternately magnetizing said first set of members and said second set of members to close the gaps by magnetic attraction and move the driven body alternately in said first direction and said second direction.

4,249,116

CONTROLLER FOR COMPUTER CONTROL OF BRUSHLESS DC MOTORS

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Lester S. Hieda, Maui, Hi.

Filed Mar. 23, 1979, Ser. No. 23,484
Int. Cl.[3] H02P *6/02*
U.S. Cl. 318—254 **6 Claims**



1. A speed and torque controlling system for a brushless DC motor of the type having three phase windings comprising:

means for deriving synchronizing signals from a motor shaft of said motor as said motor rotates;

decoder means to which said synchronizing signals are applied for producing, in response thereto, first and second gating signals;

means for generating correlation signals related to said first gating signals;

a first signal source;

a second signal source;

a programmable oscillator having an output signal related to said correlation signals, said programmable oscillator comprising means responsive to said first signal source for determining the frequency of said output signal, said programmable oscillator further comprising means responsive to said second signal source for determining the duty cycle of said output signal;

means for altering said first gating signals by said programmable oscillator output signal to provide third gating signals; and

driving means responsive to said second gating signals and said third gating signals for applying current to the windings of said motor.

4,249,117

ANTI-KICKBACK POWER TOOL CONTROL

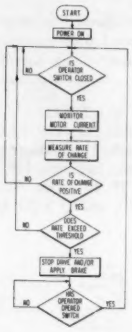
Jill L. Leukhardt, Baltimore, and David A. Saar, Timonium, both of Md., assignors to Black and Decker, Inc., Newark, Del.

Filed May 1, 1979, Ser. No. 35,130
Int. Cl.[3] H02P *3/00*
U.S. Cl. 318—275 **34 Claims**

1. A method of detecting an impending kickback condition in a power tool of the type having an implement driven by an electric motor, said electric motor being supplied with current from an AC source, the method comprising the steps of:

(a) sampling successive periods of the current through said motor at determinate points in the current waveform;

(b) filtering the sampled values of motor current;



(c) measuring the rate of change of the results of said step of filtering;

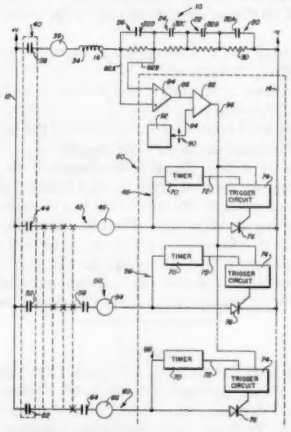
(d) comparing the measured rate of change with a threshold to detect an impending kickback condition.

4,249,118

CONTROL SYSTEM FOR MULTIPLE SPEED MOTOR

Richard W. Roof, West Columbia, S.C., assignor to Square D Company, Palatine, Ill.

Filed Aug. 27, 1979, Ser. No. 69,653
Int. Cl.[3] G05P *5/00*
U.S. Cl. 318—305 **13 Claims**



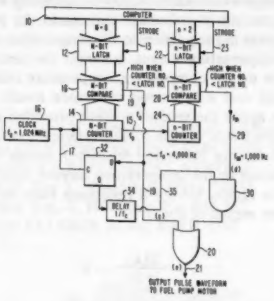
1. A control system for a motor having a multiple speed setting, the system being connectable to a source of potential, comprising a motor circuit having a plurality of independently actuable potential varying means, a control circuit for each potential varying means, each control circuit including time delay means responsive to a previously energized control circuit for delaying operation thereof, means for producing a reference signal, means for comparing said reference signal with the effective potential across said motor circuit and producing an output signal when said reference signal is greater than the potential across said motor circuit, and means for

supplying said output signal to said time delay means to bypass said time delay means when an output signal is present.

4,249,119
DIGITAL DRIVE CIRCUIT FOR ELECTRIC MOTOR OR THE LIKE

Anthony D. Robbi, Hopewell, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 18, 1978, Ser. No. 970,806
Int. Cl.³ H02P 5/16
U.S. Cl. 318—341 **10 Claims**



1. Means to generate a variable electric drive signal for application to a utilization device, comprising

a source of a binary signal representing a desired drive current amplitude, said signal including N high-order bits and n low-order bits,

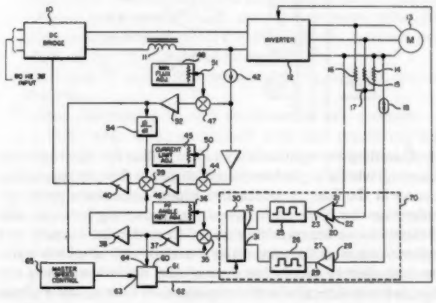
first means to generate a pulse waveform having a fixed frequency f_o higher than the frequency to which the utilization device can respond, having a variable pulse width duty cycle, and having pulses with widths in accordance with the value of said high-order bits, whereby the pulses may have any one of 2^N discrete widths, and

second means to make an increase in the widths of a proportion of the pulses of said pulse waveform determined by the value of said low-order bits.

4,249,120
VARIABLE SPEED INDUCTION MOTOR CONTROL SYSTEM

Kent L. Earle, Woodbridge, Ill., assignor to McGraw-Edison Co., Rolling Meadows, Ill.

Filed Jul. 26, 1979, Ser. No. 61,016
Int. Cl.³ H02P 7/36
U.S. Cl. 318—729 **5 Claims**



1. In an induction motor power system of the type in which a source of substantially fixed-frequency alternating current energy is used to supply an induction motor characterized by a power factor phase angle between motor voltage and current and in the operation of which it is desired to vary the operating speed and load requirements of said induction motor, variable frequency control means operative to maintain a substantially constant motor power factor notwithstanding changes of speed and load imposed, said variable frequency control means comprising:

bridge means coupled to said source of substantially fixed-frequency alternating current electrical energy, converting said alternating current energy to direct current energy;

inverter means, coupled to said bridge means, and said alternating current motor, converting the direct current output of said bridge means to alternating current energy;

power factor means, coupled to said motor, detecting the phase angle between the voltage and current of said motor and producing a power factor error signal indicative of said phase angle independent of motor frequency;

voltage means, coupled to said power factor means and said bridge means changing the output voltage magnitude of said bridge means in response to said power factor error signal;

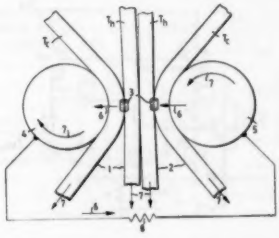
frequency means, coupled to said inverter means and said power factor means, changing the frequency of alternating current voltage applied to said motor to maintain said substantially constant power factor; and

speed adjustment means coupled to said frequency means, providing a coarse adjustment of inverter frequency in response to operator speed selection.

4,249,121
THERMOELECTRIC ARRANGEMENT

Reinhard Dahlberg, Innere Bergstrabe 32, D-7101 Flein, Fed. Rep. of Germany

Filed Jul. 26, 1978, Ser. No. 928,258
Claims priority, application Fed. Rep. of Germany, Jul. 28, 1977, 2734022
Int. Cl.² H01J 45/00
U.S. Cl. 322—2 R **16 Claims**

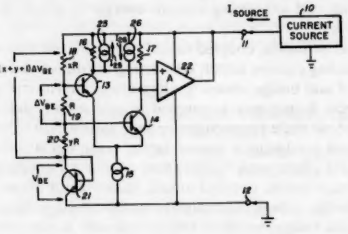


1. A thermoelectric arrangement comprising a thermoelement having limbs formed from plates, movement means for moving said plates relative to each other with said plates being in touch contact at at least one point to form a bundle of alternate p/n and n/p thermoelectrical junctions and means enabling flows of electrical current through said bundle perpendicular to the main surfaces of said plates.

4,249,122
TEMPERATURE COMPENSATED BANDGAP IC VOLTAGE REFERENCES

Robert J. Widlar, Puerto Vallarta, Mexico, assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jul. 27, 1978, Ser. No. 928,631
Int. Cl.[3] G05F 3/20
U.S. Cl. 323—313 8 Claims

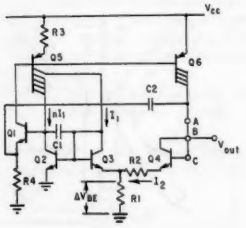


1. In a voltage reference circuit comprising:
means for supplying operating current to said circuit;
means for developing a first potential based upon the base to emitter potential of a transistor, said first potential having a negative temperature coefficient;
means for developing a second potential based upon the difference in the base to emitter potentials of first and second transistors operating at different current densities to produce a current density ratio, said second potential having a positive temperature coefficient; and
means for combining said first and second potentials to obtain a reference potential, said means for combining operating to produce a reference potential that is temperature compensated to a first order; the improvement comprising:
means for varying said current density ratio as a function of temperature to temperature compensate said reference potential to a second order.

4,249,123
TEMPERATURE COMPENSATED REFERENCE VOLTAGE REGULATOR

Stephen C. Kwan, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 737,134, Oct. 29, 1976, abandoned.
This application Oct. 25, 1978, Ser. No. 954,671
Int. Cl.[2] G05F 1/60
U.S. Cl. 323—314 3 Claims



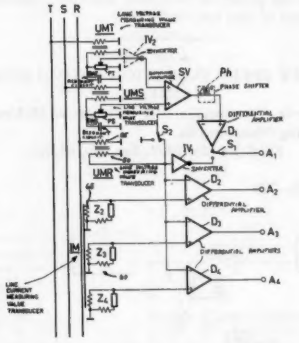
1. A temperature compensated reference voltage regulator comprising:
current source transistor means for providing a first current, a second current, and a third current n times greater than the first current, where n is greater than unity, each of the first, second and third currents being proportional to an applied drive current;
first drive transistor means for applying drive current to the current source transistor means in proportion to an applied drive current;
second drive transistor means for applying a portion of the third current as drive current to the first drive transistor in proportion to an applied drive current;
third drive transistor means for applying a portion of the first current as drive current to the second drive transistor means in proportion to an applied reference voltage;
reference resistance means for applying a reference voltage to the third drive transistor means in proportion to an applied reference current; and
temperature compensation means for applying a portion of the second current as reference current to the reference resistance means in proportion to the temperature of the temperature compensating means, wherein the temperature compensation means comprises a temperature reference transistor means and a balancing resistance means connected in series to apply the second current provided by the current source transistor means to the reference resistance means, the temperature reference transistor means having a V_{BE} proportional to the temperature thereof, and the balancing resistance means having a resistance ratio to the reference resistance means of about

$$\frac{22.63}{\ln(n)} - 1.$$

4,249,124
METHOD AND APPARATUS FOR MONITORING FAULTS BY MEANS OF A POLYGONAL TRIGGER REGION

Ivan De Mesmaeker, Fislisbach, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Mar. 27, 1978, Ser. No. 890,794
Claims priority, application Switzerland, Apr. 1, 1977, 4091/77
Int. Cl.[3] H02H 3/38; G01R 31/02
U.S. Cl. 324—51 9 Claims



1. A method for monitoring an electric line for short-circuits occurring within a predetermined distance from a measuring location at the line, in which line phase detection signals dependent on the distance between the measuring location and the short-circuit location are formed from the line current and the line voltage at the measuring location, and in which timewise immediately successive ones of said detection signals are subjected to a detection and comparison of their relative phase angles with a threshold value of at least approximately 180° to produce a triggering signal in the event of a short-circuit occurring within said predetermined distance, comprising the steps of:
(a) forming at least three reference signals proportional to

the voltage drop across one reference impedance each, said voltage drop being generated by applying a line current signal to the respective reference impedance;

(b) defining a polygonal triggering region in the impedance plane from said at least three reference signals and their respective reference impedance;

(c) forming a differential detection signal from each of said reference signals by forming the difference between a corresponding reference signal and a line voltage signal; and

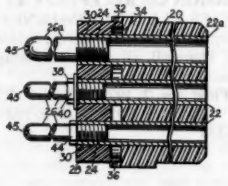
(d) using at least one external signal as an additional detection signal besides said differential detection signals in said phase angle detection and threshold value comparison in succession, together with said differential detection signals.

4,249,125

PORTABLE DEVICE FOR TESTING AND/OR TEMPORARILY CORRECTING CIRCUITS IN A VEHICLE ELECTRICAL SYSTEM

Clem Carver, P.O. Box 4,, Blackwell, Okla. 74631

Filed Aug. 4, 1978, Ser. No. 931,167
Int. Cl.³ G01R *31/02;* H01R *3/00*
U.S. Cl. 324—51 **4 Claims**



1. A portable testing and circuit correcting device for insertion between a pair of releasable junction portions of a vehicle electrical system of a type having a plurality of individual power circuits operating through the junction portions for energizing light circuits of the vehicle, said device comprising:

a. a body member having opposite ends;

b. a plurality of longitudinally extending sockets provided in said body member with a segment of each socket projecting beyond an end of said body member;

c. said sockets being defined by electrically conducting means arranged to have releasable plug-in engagement with one of the junction portions of the vehicle electrical system;

d. a plurality of prongs of electrically conducting means connected to said sockets and projecting from the said end of said body member and arranged to have releasable plug-in engagement with the other of the junction portions of the vehicle electrical system;

e. said end of said body member having recesses formed therein;

f. visual electrical indicators positioned in said recesses;

g. a removable cover positioned over said projecting segment of each socket, said cover having a peripheral flange engaging said end of said body member for retaining said visual indicators in said recesses;

h. said sockets and respective prongs being arranged when plugged in between the releasable junction portions of a vehicle electrical system to be supported by the junction portions and to provide electrical connection between power circuits and light circuits of the vehicle; and

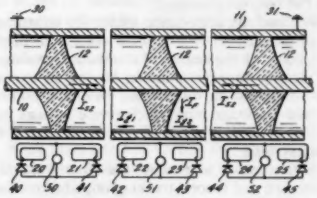
i. said prongs being releasably attachable to said socket such that when removed one or more of said prongs are arranged to isolate selected light circuits of the vehicle from its power source with said visual indicators indicating the power condition in each circuit.

4,249,126

ON-LINE FAULT LOCATOR FOR GAS-INSULATED CONDUCTORS WITH PLURAL DETECTORS

Lorne D. McConnell, Chalfont, Pa., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Jul. 2, 1979, Ser. No. 54,280
Int. Cl.³ G01R *31/10*
U.S. Cl. 324—52 **9 Claims**



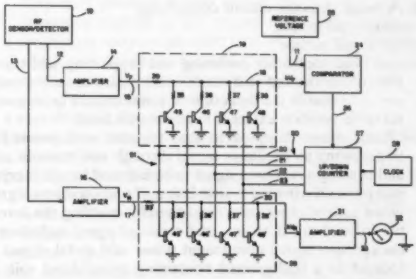
1. A fault locator for determining the location of a fault within an enclosed high voltage gas-insulated electrical system; said enclosed high voltage gas-insulated electrical system comprising a gas-filled, sealed grounded conductive outer housing, electrically conductive means disposed within and insulated from said conductive outer housing, and a plurality of spaced insulator supports connected between and supporting said electrically conductive means from said conductive outer housing; said fault locator including at least first and second current-sensing means magnetically coupled to detect differential fault current flow in said grounded metal housings and to respective first and second portions of said conductive outer housing on opposite sides of at least one of said plurality of spaced insulator supports for detecting current flow in said first and second portions of said conductive outer housing; and respective first and second indicator means connected to said first and second current-sensing means for indicating the detection of current by said first and second current-sensing means respectively.

4,249,127

STANDING WAVE RATIO MEASURING SYSTEM

Daniel G. Morgan, Wolfeboro, N.H., assignor to Tram/-Diamond Corporation, Winnisquam, N.H.

Filed Dec. 4, 1978, Ser. No. 966,352
Int. Cl.³ G01R *27/00*
U.S. Cl. 324—57 R **6 Claims**



1. A standing wave ratio measuring instrument comprising:

(a) first tracking impedance means for adjusting the degree of attenuation of a forward voltage having an attenuated forward voltage at an output and having a control signal input and a voltage input, the forward voltage being proportional to the magnitude of forward voltage in a RF transmission system;

(b) a reference voltage source having a reference voltage at an output;

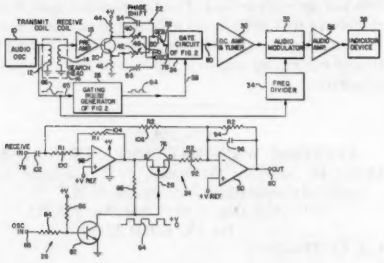
(c) comparator means connected to the output of the first tracking impedance means and to the output of the reference voltage source for comparing the attenuated forward voltage with the reference voltage and for producing a control signal at an output in response thereto;
(d) a register having an input connected to the output of the comparator means and having a digital control signal output as an output whereby the first attenuator means is controlled to cause the attenuated forward voltage to track the reference voltage;
(e) second tracking impedance means for adjusting the degree of attenuation of a reverse voltage in linear correspondence with the degree of attenuation produced by the first tracking impedance means having an attenuated reverse voltage at an output and having a control signal input and a voltage input, the reverse voltage being proportional to the magnitude of reverse voltage in the transmission system;
(f) connection means to connect the control signal input of both the first and second tracking impedance means to the same digital control signal output of the register; and
(g) output means having an input connected to the output of the second tracking impedance means for producing a representation of the standing wave ratio of the RF transmission system.

4,249,128

WIDE PULSE GATED METAL DETECTOR WITH IMPROVED NOISE REJECTION

James P. Karbowski, Philomath, Oreg., assignor to White's Electronics, Inc., Sweet Home, Oreg.

Filed Feb. 6, 1978, Ser. No. 875,677
Int. Cl.[3] G01V *3/11*
U.S. Cl. 324—329 **18 Claims**



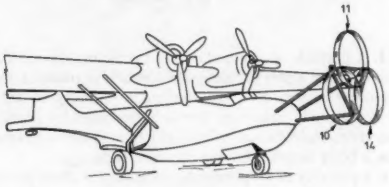
1. A metal detector circuit comprising:
transmit coil means;
receive coil means;
search head means for enclosing and supporting said transmit coil means and said receive coil means in such a manner as to enable the detection of metal objects in an unobservable position external to the search head;
oscillator means coupled to said transmit coil means for transmitting an oscillator signal through said transmit coil and causing a received signal to be induced in said receive coil means during the transmission of said oscillator signal when a metal object is present thereby enabling the detection of said metal object, said received signal including a background signal component when said metal object is located in a background containing mineralized soil or undesired objects;
gating pulse generator means for producing gating pulses related in time to the oscillator signal, said gating pulses having a pulse width of at least about one third of one cycle of said oscillator signal;
a gate circuit coupled to the output of said pulse generator and having its input coupled to the output of said receive coil means, including gate means for gating a portion of said received signal through said gate means during the transmission of said oscillator signal when it is rendered conducting for a time period corresponding to the width of the gating pulse to produce an output signal corresponding to the gated portion of said received signal;
phase adjustment means coupled to the gate circuit for moving the gating pulses and received signal relative to each other to center said gating pulses at a centering position on the received signal waveform where the background signal component of said received signal is of minimum amplitude, and for causing substantially equal positive and negative polarity portions of the background signal component on opposite sides of said centering position to pass through said gate means during the gating pulse; and
noise reduction means for reducing noise, including random noise of high frequency and 60 hertz noise signals and harmonics thereof, in said output signal including an inverter amplifier having an inverting input connected to the output of said gate means and an averaging capacitor connected in a negative feedback path between the output of said inverter amplifier and said inverting input to cause said positive and negative portions to cancel and produce substantially no change in the output signal.

4,249,129

EFFICIENT SIMULTANEOUS ELECTROMAGNETIC TRANSMISSION OR RECEPTION AT DIFFERENT FREQUENCIES IN ELECTROMAGNETIC MAPPING

Ivo Brcic, Willowdale; Valentine Burda, Schomberg, and Ulrich W. Rentsch, Thornhill, all of Canada, assignors to Scintrex Limited, Concord, Canada

Filed Apr. 2, 1979, Ser. No. 25,760
Int. Cl.[3] G01V *3/10, 3/165*
U.S. Cl. 324—335 **1 Claim**



1. Electromagnetic exploration apparatus comprising means for simultaneously transmitting electromagnetic fields of three different frequencies, means for receiving transmitted electromagnetic fields of three different frequencies, at least one of said transmitting means and said receiving means including three air cored coils each lying in its own plane and having an axis perpendicular to its plane, said coils being mounted with their axes at least substantially parallel and with their planes closely spaced and at least substantially parallel, each coil being overlapped sufficiently with respect to the other two coils that the mutual inductance of said three coils is at least substantially zero.

4,249,130

DWELL MEASURING APPARATUS

Clinton G. Goss, Palatine, Ill., assignor to Sun Electric Corporation, Crystal Lake, Ill.

Filed Nov. 13, 1978, Ser. No. 960,189
Int. Cl.[3] G01R *29/00*
U.S. Cl. 324—386 **2 Claims**

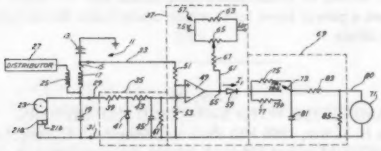
1. Apparatus for measuring the dwell time of an engine ignition system employing an ignition switch which periodically opens and closes in synchronism with the engine, said ignition switch generating an ignition signal, said apparatus comprising:

shaping means for shaping the ignition signal to form an output voltage level;

first means for producing a reference voltage;

second means for comparing the magnitude of said output voltage level to the magnitude of said reference voltage level, said second means generating a current signal of a substantially constant magnitude responsive to the relative magnitudes of said output voltage level and said reference voltage level for producing said current signal for a time representative of the time that the ignition switch is closed, said second means including drive means for selectively changing the constant magnitude of said current signal to another constant magnitude, and said second means including:

(i) comparator means for producing a first voltage level responsive to the magnitude of said output voltage level exceeding the magnitude of said reference voltage level



and for producing a second voltage level responsive to the magnitude of said output voltage level being less than the magnitude of said reference voltage level; and

(ii) current producing means for producing said current signal responsive to the production of said second voltage level, said current producing means being selectably variable for predetermining the magnitude of said current signal, said current producing means continuously generating current, and said comparator means directing said current for generating said current signal; and

a visual display device connected to said second means and responsive to said current signal for producing a representative visual display of the time of generation of said current signal, whereby said visual dispiay device provides a measurement of the dwell time of the engine ignition system.

4,249,131

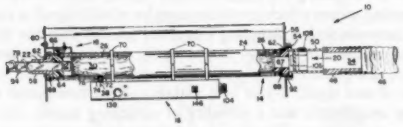
METHOD AND APPARATUS FOR MEASURING ELECTROSTATIC CHARGE DENSITY

Thomas E. Owen, San Antonio, Tex., assignor to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Apr. 11, 1979, Ser. No. 29,242

Int. Cl.[3] G01N *27/60*

U.S. Cl. 324—452 **24 Claims**



1. An electrostatic charge density measuring device for measuring electrostatic charge density of a charged atmosphere comprising:

electrically insulated chamber means;

conduit means for circulating an uncharged atmosphere through said chamber means;

valve means connected to said conduit means for temporarily changing circulation through said conduit means and through said chamber means from said uncharged atmosphere to said charged atmosphere, said valve means being located in said charged atmosphere at least during said measuring, both said valve means and said conduit means being electrically nonconductive to minimize electrical effect on said charged atmosphere;

capacitor means formed between said chamber means and ground means, said charged atmosphere circulating through said chamber means to charge said capacitor means from said electrostatic charge; and

control means for measuring current flow from said capacitor means as caused by said electrostatic charge and converting said measured current to charge density of said charged atmosphere.

4,249,132

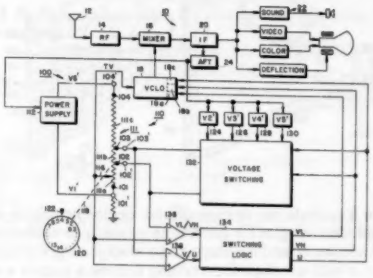
CONTINUOUS TUNING ARRANGEMENT FOR A MULTIBAND TELEVISION RECEIVER

Dal F. Griepentrog, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 30, 1978, Ser. No. 965,218

Int. Cl.[2] H04B *1/18*

U.S. Cl. 455—180 **13 Claims**



1. A tuning system for tuning a receiver to various channels in at least first and second tuning bands, comprising:

a tunable circuit;

voltage variable means for determining the frequency response of said tunable circuit in said first and second bands in response to a tuning voltage, said tuning voltage having first, second, third and fourth magnitudes corresponding to the lowest frequency channel in said first band, the highest frequency channel in said first band, the lowest frequency channel in said second band and the highest frequency channel in said second band, respectively;

a continuous resistive element, first, second and third points along said resistive element defining first and second resistive sections corresponding to said first and second tuning bands, respectively;

a movable contact;

means for moving said movable contact along said resistive element;

position detecting means for detecting when said movable contact is in contact with said first resistive section and when said movable contact is in contact with said second resistive section;

a power supply;

first means coupled to said power supply for developing a first voltage corresponding to said first magnitude at said first point;

second means coupled to said power supply and to said position detecting means for selectively developing a second voltage corresponding to said second magnitude at said second point when said movable contact is in said first resistive section and a third voltage corresponding to said third magnitude at said second point when said movable contact is in said second resistive section, said second means including voltage divider means coupled to said

power supply and having first and second impedance means coupled in series with the junction thereof coupled to said second point, one of said first and second impedance means being coupled to said position detecting means and having a first impedance value when said movable contact is in said first resistive section and a second impedance value when said movable contact is in said second resistive section; and

third means coupled to said power supply for developing a fourth voltage corresponding to said fourth magnitude at said third point;

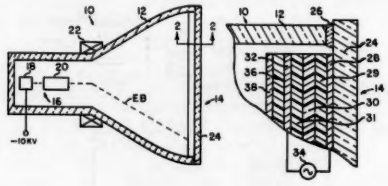
said tuning voltage being developed at said movable contact.

4,249,133

ELECTROLUMINESCENT CATHODE RAY STORAGE TUBE

Gary S. Barta, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Jul. 10, 1978, Ser. No. 922,950
Int. Cl.[3] G11C *11/23, 11/26*
U.S. Cl. 328—123 **9 Claims**



1. In a cathode ray storage display device having an envelope, an electron gun for generating an electron beam located in one section of said envelope and a storage target in another section of said envelope for retaining thereon a pattern written by said electron beam under the control of deflection means, the improvement comprising;

a phosphor layer onto which said electron beam engages for generating a light-producing image corresponding to the pattern created by said electron beam;

an electroluminescent structure adjacent said phosphor layer including an electroluminescent layer having transparent conductive coatings on each side of said electroluminescent layer with areas of said electroluminescent layer corresponding to said light-producing image of said phosphor layer being activated to display a visible image corresponding to said light-producing image;

means for applying sustain pulses to said conductive coatings to maintain said visible image in a stored condition in said electroluminescent layer, or to place said electroluminescent layer in a ready to write state; and

said electron gun being activated during intervals between said sustain pulses or during an interval when said sustain pulses are interrupted and said electron beam from said electron gun being directed under control of said deflection means to a selected area or selected areas of said storage target to selectively erase stored information therefrom.

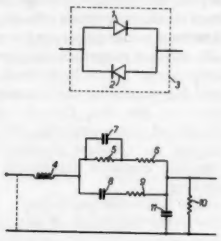
4,249,134

RADIO FREQUENCY DETECTORS

William F. Stacey, Saxilby, England, assignor to AEI Semiconductors Limited, Lincoln, England

Filed Dec. 27, 1978, Ser. No. 973,583
Int. Cl.[3] H03D *1/10*
U.S. Cl. 329—205 R **7 Claims**

1. A radio frequency detector including a Schottky barrier diode and a further semiconductor diode having a very low internal capacitance and being connected in shunt therewith, the further diode being connected in opposite polarity to that of the Schottky barier diode and being mounted closely adjacent thereto on a common carrier, said further diode establishing a low impedance path for r.f. input applied to the Schottky



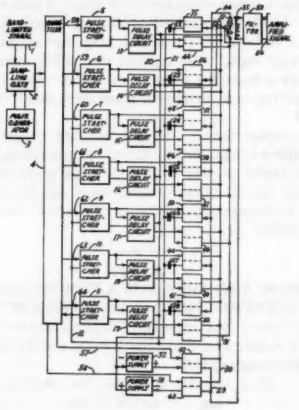
barrier diode, in shunt therewith, when the r.f. input approaches a power input level which could harm the Schottky barrier diode.

4,249,135

AMPLIFIER WITH SWITCHED CAPACITORS

Charles B. Fisher, 2850 Hill Park Rd., Montreal, Quebec, Canada (H3H 1T1), and Sidney T. Fisher, 53 Morrison Ave., Mt. Royal, Montreal, Quebec, Canada (H3R 1K3)

Filed Mar. 25, 1980, Ser. No. 133,914
Int. Cl.[3] H03F *3/38*
U.S. Cl. 330—10 **3 Claims**

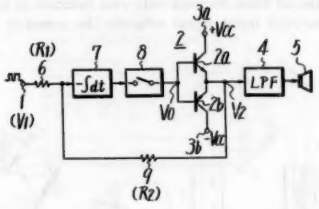


1. An amplifier for a band-limited signal, which comprises sampling means which produces samples of said signal at regular intervals with a sampling frequency greater than the minimum sampling or Nyquist frequency for said signal frequency band, and quantizing means which quantizes each of said samples of said signal to one of a plurality of predetermined discrete amplitudes, and a plurality of switching means, one or more of which are actuated by said quantizing means as each of said samples is received, which charge to a substantially fixed potential of selected polarity and subsequently discharge a unique group of one or more capacitors, with a total capacitance which is a function of the amplitude of said quantized sample, said group forming part of a plurality of capacitors, during a period not greater than the spacing of two adjacent samples of said samples, through output means which adds arithmetically the currents due to said charge and said discharge, and passes the total of said currents through filter means which has a pass-band substantially the same as said signal frequency band, to an external load.

4,249,136
PWM SIGNAL POWER AMPLIFIER

Tadao Suzuki, and Tadao Yoshida, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 22, 1979, Ser. No. 41,325
Claims priority, application Japan, May 23, 1978, 53-61376
Int. Cl.[3] H03F 3/217
U.S. Cl. 330—251 6 Claims

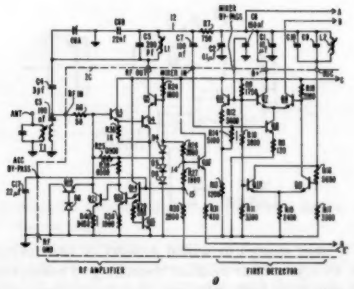


1. A PWM signal power amplifier comprising:
(a) signal input means for supplying a pulse width modulated signal to be power-amplified;
(b) integrating means having input and output terminals, said input terminal being supplied with the pulse width modulated signal from said signal input means;
(c) zero-cross switching means having an input connected to the output terminal of said integrating means and an output;
(d) pulse amplifying means having an input connected to the output of said zero-cross switching means and an output;
(e) low pass filter means connected to the output of said pulse amplifying means and having an output to which a load is connected; and
(f) negative feedback means connected between the output of said pulse amplifying means and the input terminal of said integrating means.

4,249,137
AMPLIFIER SYSTEM WITH AGC, AS FOR AN AM RADIO

Max E. Malchow, Raritan Township, Hunterdon County, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 11, 1978, Ser. No. 968,443
Int. Cl.[3] H03G 3/30
U.S. Cl. 330—283 19 Claims

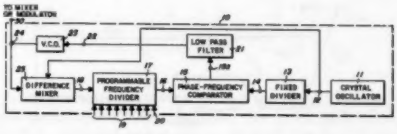


2. In combination:
means for supplying input signal with a range of strengths; a common-emitter transistor amplifier having base, emitter and collector circuits;
means responsive to the amplitude of signal in said collector circuit for providing a gain control signal;
means responsive to said gain control signal for applying reverse automatic gain control to said emitter circuit;
means for feeding forward a portion of said input signal to said collector circuit;
means for selectively providing drive to said base circuit from said means for supplying input signal, including
means for sensing when said gain control signal is of a level indicating the amplitude of the component of signal in said collector circuit attributable to the feed-forward portion of said input signal would be of a magnitude greater than the component that would be attributable to the input signal being amplified by said common-emitter amplifier transistor were its base circuit driven from said means for supplying input signal, and including
means responsive to that condition being sensed for interrupting drive otherwise provided to said base circuit from said means for supplying input signal.

4,249,138
CITIZENS BAND TRANSCEIVER FREQUENCY SYNTHESIZER WITH SINGLE OFFSET AND REFERENCE OSCILLATOR

Robert R. Bell, Libertyville, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 7, 1979, Ser. No. 36,727
Int. Cl.[3] H03B 3/04
U.S. Cl. 331—1 A 14 Claims



1. A frequency synthesizer with a single offset and reference oscillator, comprising:
an electronically controllable frequency divider means which has a maximum input frequency F_{inmax} at which it can operate at, said frequency divider means receiving an input signal at a frequency F_{in} less than F_{inmax} and producing an output signal which has a frequency corresponding to the frequency of the input signal F_{in} divided by a predetermined integer, the frequency divider means receiving electrical control signals which determine the predetermined integer;
master crystal oscillator means producing an output signal having a stable operative frequency F_{xtal} which is substantially above the frequency F_{in};
voltage controlled oscillator (VCO) means providing an output signal having a frequency F_{vco} substantially above the frequency F_{in};
difference mixer means coupled to said VCO means for receiving a signal therefrom having a frequency no more than F_{vco}, and coupled to said crystal oscillator means for receiving a signal therefrom having a frequency no more than the frequency F_{xtal}, said mixer means providing at an output a signal having a frequency equal to the difference of the frequencies of the received signals, said mixer output coupled to said controllable divider means with said divider means receiving a signal having a frequency F_{in} less than the frequency F_{inmax} and no more than the frequency of the output signal of said mixer means;
said VCO means, difference mixer means and controllable divider means being part of a phase-frequency locked loop;
phase-frequency comparator means also being included in said phase-frequency locked loop and receiving an input from the output of the controllable divider means;
fixed divider means coupled to said master crystal oscillator for providing a signal having a frequency substantially less

than F_{xtal} as another input to said phase-frequency comparator means from said master crystal oscillator means;

said phase-frequency comparator means providing a difference output signal related to the phase-frequency difference between the output signal of the controllable divider means and the output signal of the fixed divider means; and

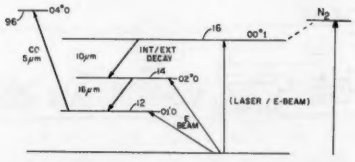
low pass filter means which is part of said phase-frequency locked loop and receives said phase-frequency difference output signal and supplies a DC control input signal to said VCO means in response thereto, wherein said VCO output signal is determined in accordance with said controllable divider means receiving appropriate electrical control signals, whereby only a single stable oscillator is required by the frequency synthesizer, no frequency multiplication stages in the phase-frequency locked loop are required, and an inexpensive controllable frequency divider means operable at a relatively low maximum frequency F_{inmax} can be used.

4,249,139

CO_2 LASER EMITTING AT 16 MICRONS IN 02°0-01'0 TRANSITION

Gary L. McAllister, Richland, Wash., assignor to Jersey Nuclear-Avco Isotopes, Inc., Bellevue, Wash.

Filed Dec. 19, 1977, Ser. No. 861,986
Int. Cl.[2] H01S 3/09
U.S. Cl. 331—94.5 P **24 Claims**



1. A CO_2 laser for emitting 16 micron radiation comprising:

optical resonant cavity means;

optically coupled to said cavity, a CO_2 lasable medium having a 16 micron transition between a first and a relatively higher second excited state;

means for exciting said medium to said second excited state;

means for inducing a 16 micron radiation transition from said second to said first excited state; and

optical pumping means for selectively depopulating said first excited state to maintain a population inversion between said first and second states.

4,249,140

CLOSED LOOP RESONATOR FEEDBACK SYSTEM

Robert J. Frieberg, Palm Beach Gardens, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed May 31, 1978, Ser. No. 911,259
Int. Cl.[3] H01S 3/081
U.S. Cl. 331—94.5 C **18 Claims**

1. A resonator feedback system comprising:

a resonator defined at one end by a first reflector and at the other end by a second reflector wherein at least the first reflector has a reflective surface capable of being deformed;

means for providing an output beam from the resonator;

means for sampling a portion of the output beam to provide a monitor beam to a feedback loop; and

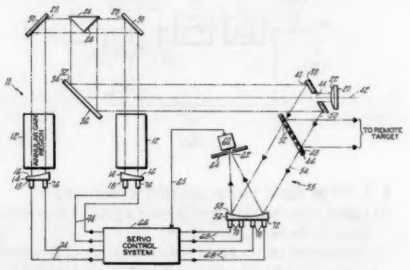
a feedback loop including;

a collector mirror having a concave reflective surface in optical communication with the means for sampling a portion of the output beam for focusing the monitor beam onto a detector;

first actuator means, orderly disposed on a back surface of the collector mirror, responsive to multidither signals from a servo control system for deforming the concave reflective surface of the collector mirror to impress a phase modulation on the monitor beam;

a plate, located at a focal plane of the concave reflective surface of the collector mirror, having an aperture located therein for transmitting a portion of the monitor beam therethrough;

a detector, located juxtaposed the plate, for sensing a monitor beam focused onto said detector to provide an electrical input signal wherein the concave reflective



surface of the collector mirror is in optical communication with the detector through the aperture in the plate;

a servo control means for providing multidither signals to the first actuator means and for synchronously monitoring the electrical input signals with the multidither signals to provide multicorrection signals to second actuator means; and

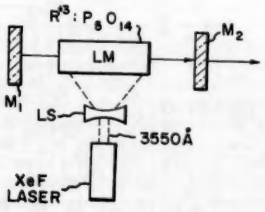
second actuator means, orderly disposed on a back surface of the first reflector, responsive to the multicorrection signals for deforming the reflective surface of the first reflector.

4,249,141

LASER SYSTEMS USING PENTAPHOSPHATE ACTIVE MEDIUMS

David C. Brown, Fairport, and Jack Wilson, Rochester, both of N.Y., assignors to University of Rochester, Rochester, N.Y.

Filed Jun. 8, 1978, Ser. No. 913,920
Int. Cl.[3] H01S 3/16
U.S. Cl. 331—94.5 F **17 Claims**

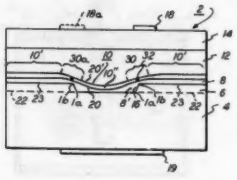


1. In a laser system in which a beam of laser radiation is emitted, an active laser medium consisting of pentaphosphate (P_5O_{14}) doped at least with one rare earth element with a valence of three selected from the group consisting of N_d, P_r, H_o, E_u, E_r, S_m, T_b, D_y, and means for pumping said medium with radiation confined to wavelengths where said medium has strong absorption, said pumping means being an excimer laser and means for illuminating said medium with radiation from said excimer laser.

4,249,142
ENHANCEMENT OF LOWEST ORDER MODE OPERATION IN NONPLANAR DH INJECTION LASERS

Robert D. Burnham, Los Altos Hills, and Donald R. Scifres, Los Altos, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 30, 1978, Ser. No. 964,863
Int. Cl.³ H01S 3/19
U.S. Cl. 331—94.5 H 4 Claims

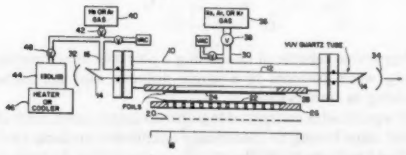


1. In an injection laser comprising a substrate body having a surface with an elongated channel in said surface and having shoulders at the upper extremities thereof adjacent said surface, first, second and third layers of semiconductor material sequentially formed on said substrate and in said channel, said second layer having a material with a higher index of refraction and lower bandgap than the material of said first and third layers and forming the active layer for said laser, and constricted region formed in said active layer above at least one of said shoulders, current confinement means located above said constricted region and offset relative to said elongated channel to confine the pumping current through said constricted region whereby light wave propagation under lasing conditions occurs in said constricted region, and means located below said constricted region adjacent said channel and in the surface of said substrate for restricting the flow of pumping current to a path through said channel, both of said means contributing to the inducement light wave propagation in said constricted region.

4,249,143
XENON FLUORIDE AND MERCURY CHLORIDE PHOTODISSOCIATION LASERS

J. Gary Eden, Bowie, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 25, 1979, Ser. No. 33,298
Int. Cl.³ H01S 3/23
U.S. Cl. 331—94.5 G 19 Claims



1. Apparatus for producing monochromatic coherent radiation which comprises:

a first cylindrical elongated means containing a mixture of a RGX_2 gas and a buffer gas, wherein RG is a rare gas or metal ion and X is a halogen ion, and the RGX_2 gas is capable of photolysis to form an optically active RGX gas having an inverted population state;

a second cylindrical elongated means surrounding said first cylindrical means in coaxial relationship therewith and containing a fluorescer gas having an emission frequency sufficient to effect photolysis of the RGX_2 gas and form an optically active RGX gas having an inverted population state;

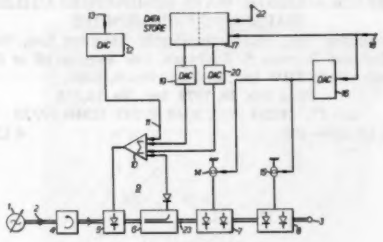
electron-producing means for exciting said fluorescer gas, said first cylindrical means including end windows at Brewster's angle; and

a fully reflective mirror and a partially reflective mirror in optical alignment with said first cylindrical means forming a resonant laser cavity.

4,249,144
CONTROLLABLE MICROWAVE ATTENUATOR

Geoffrey J. Hurst, Bassingbourn, and Andrew W. Butler, Letchworth, both of England, assignors to Marconi Instruments Limited, Chelmsford, England

Filed Dec. 4, 1979, Ser. No. 100,002
Claims priority, application United Kingdom, Dec. 13, 1978, 48413/78
Int. Cl.³ H03H 7/25
U.S. Cl. 333—81 R 7 Claims

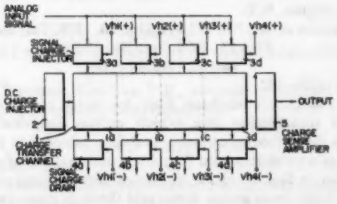


1. A microwave attenuation circuit including at least two variable impedance diodes connected in a serial path, one end of which is arranged to receive an applied microwave signal and the other end of which provides an attenuated output signal, one diode forming part of a feedback loop in which a signal attenuated by it is combined with a variable reference signal representative of a particular degree of attenuation so as to control the attenuation of said one diode or diodes, the impedance of the further diode being variable in discrete steps by selection of particular values of a bias signal applied to it; and means for modifying the attenuation of said one diode in dependence on the value of the selected bias signal to compensate for non-linearities in said further diode or diodes.

4,249,145
INPUT-WEIGHTED CHARGE TRANSFER TRANSVERSAL FILTER

Tatsuo Sakaue, Yokohama; Yasoji Suzuki, Ayase, and Tetsuya Iida, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Aug. 3, 1979, Ser. No. 63,564
Claims priority, application Japan, Aug. 17, 1978, 53-100408; Aug. 17, 1978, 53-100413
Int. Cl.³ H03H 15/02; G11C 27/02; H03K 17/693
U.S. Cl. 333—165 15 Claims



1. A charge transfer transversal filter comprising:

a charge transfer device including a plurality of stages for transferring charges from the first stage to the final stage;

DC charge injector means for injecting the first stage of said charge transfer device with a predetermined quantity of DC charge;

a plurality of signal charge injector means connected to receive an analog input signal, and arranged to produce a weighted charge containing a weighted AC component and a weighted DC component by weighting said analog input signal in accordance with a weighting coefficient, and to inject said weighted charge into a corresponding stage of said charge transfer device;

a plurality of charge drain means coupled to the stages of said charge transfer device for draining at least DC charge from corresponding stage; and

output charge sensing means coupled to the final stage of said charge transfer device.

4,249,146

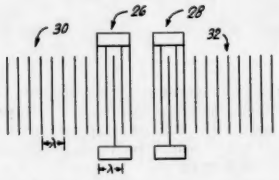
SURFACE ACOUSTIC WAVE RESONATORS UTILIZING HARMONIC FREQUENCIES

Kuo-Hsiung Yen, Manhattan Beach; Kei-Fung Lau, Harbor City, and Reynold S. Kagiwada, Los Angeles, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Feb. 23, 1979, Ser. No. 14,393

Int. Cl.³ H03H *9/25, 9/64, 9/145;* **H04R** *17/10*

U.S. Cl. 333—195 **4 Claims**



1. An acoustic wave resonator comprising:

a piezoelectric substrate;

an interdigital transducer disposed on said substrate and capable of operation at a fundamental frequency and at least one harmonic frequency; and

two reflection gratings disposed on said substrate, one on each side of said interdigital transducer, to form a resonant cavity capable of operation in fundamental and harmonic frequency modes, including at least a second harmonic mode;

and wherein a selected frequency mode of operation of said reflection gratings results in reflection of acoustic energy of a frequency higher than the fundamental frequency of said transducer.

4,249,147

CAVITY FILTER AND MULTI-COUPLER UTILIZING SAME

Daniel P. Kaegebein, Depew, N.Y., assignor to TX RX Systems Inc., Angola, N.Y.

Continuation of Ser. No. 952,011, Oct. 20, 1978. This application Feb. 21, 1979, Ser. No. 13,363

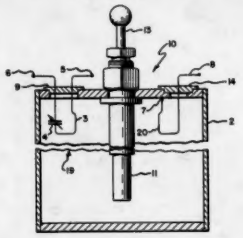
Int. Cl.³ H03H *7/09*

U.S. Cl. 333—202 **41 Claims**

1. An electrical bandpass filter for series connection in a through transmission line which carries electrical signals within a given frequency band, said filter adapted to pass only signals of a predetermined frequency into and out of a branch transmission line, to block signals of said predetermined frequency from propagating down said through transmission line in one direction but not the other, and to pass all other signals substantially undisturbed, characterized by including:

(a) a cavity resonator tuned to be resonant at said predetermined frequency;

(b) a series lumped constant reactive circuit including a series connected inductive loop at least a portion of which is disposed within said cavity resonator so as to inductively couple with the field within said resonator, said



reactive circuit being otherwise electrically insulated from said cavity resonator and having first and second ends for series connection in a transmission line; and

(c) means for inductively coupling with the interior of said cavity resonator and adapted for connection to said branch transmission line.

4,249,148

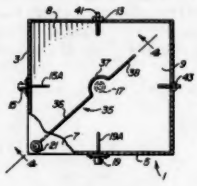
CUBICAL MULTIPLE CAVITY FILTER AND COMBINER

Ronald E. Jachowski, Paradise Valley, Ariz., assignor to Decibel Products, Inc., Dallas, Tex.

Filed Mar. 19, 1979, Ser. No. 21,542

Int. Cl.³ H01P *1/207*

U.S. Cl. 333—208 **25 Claims**



1. Apparatus capable of containing a plurality of resonating standing wave patterns in a single volume, said apparatus comprising in combination:

a. six square sides connected together to form a cube, each of said sides having an electrically conductive surface, each of said surfaces being electrically connected to the surface adjacent thereto, said cube containing a volume;

b. first and second electric field probes extending into said volume from said first and second ones of said sides, respectively, said first and second sides being mutually perpendicular; and

c. first and second coupling means for coupling first and second high frequency electrical signals to said first and second electric field probes, respectively,

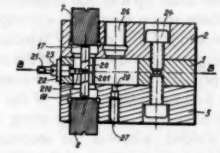
whereby said first and second electric field probes produce first and second orthogonal standing wave patterns in said volume.

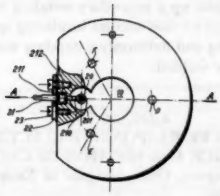
4,249,149

ULTRA HIGH-FREQUENCY CIRCUIT WITH RESONANT CAVITY EQUIPPED WITH PAIRS OF PERIPHERAL DIODES

Felix Diamand; Guy Bourrabier, and Robert Antoine, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Apr. 30, 1979, Ser. No. 34,735
Claims priority, application France, May 3, 1978, 78 13091
Int. Cl.[3] H01P 7/04, 7/06
U.S. Cl. 333—223 7 Claims





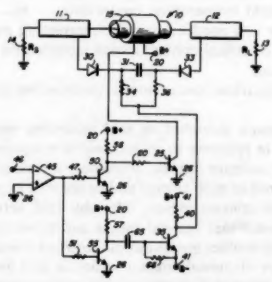
1. An ultra high-frequency circuit comprising a resonant cavity and, on the periphery of the same, at least one exciting chamber communicating with the interior of said cavity, said at least one exciting chamber comprising a pair of diodes, arranged head-to-tail, between which a central conductor defines with the walls of said exciting chamber a section of coaxial cable, said section having an opening providing access to the resonant cavity, said central conductor being used as a connection for the polarization of the two diodes.

4,249,150

HIGH POWER RF RELAY SWITCH

Robert H. Bickley, Scottsdale, and James E. Olivenbaum, Mesa, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 30, 1979, Ser. No. 35,028
Int. Cl.[3] H01P 1/10, 1/15, 1/12
U.S. Cl. 333—262 5 Claims



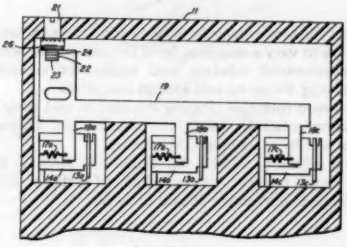
1. A high power RF switch comprising:
(a) relay means having an input and an output and an actuating coil;
(b) at least two pin diodes connected in opposed polarity relationship in parallel with said relay means generally between the input and output thereof;
(c) semiconductor switching means connected to the actuating coil of said relay means and to said two pin diodes for operating in response to a single input signal to energize the actuating coil of said relay means and forward bias said two pin diodes; and
(d) timing means included in said semiconductor switching means for operating said semiconductor switching means to reverse bias said two pin diodes subsequent to closure of said relay means while maintaining the actuating coil energized as long as the input signal is present.

4,249,151

APPARATUS FOR VARIABLY ADJUSTING A MAGNETIC LEVEL WITH A TRANSLATING SPRING FORCE

Mabel R. Esteves, Rio Piedras, P.R., assignor to Sylvania Circuit Breaker Corporation, Canovanas, P.R.

Filed Jul. 25, 1979, Ser. No. 60,692
Int. Cl.[3] H01H 71/74
U.S. Cl. 335—176 1 Claim



1. In a combination, in a three pole circuit breaker, including a housing;
three electrical conductors, one for each pole;
three magnets, each magnet in close proximity to a respective one of said conductors so as to generate a magnetic field therein when excessive current flows through said respective conductor;
three armatures, each armature adapted to be attracted by a respective one of said magnets when a magnetic field is generated in said respective magnet;
three extension springs, each spring adapted to restrain a respective one of said armatures from attraction by its respective magnet; and
means for simultaneously varying forces on said three extension springs so as to vary a magnetic level for said circuit breaker, the improvement wherein said means for simultaneously varying forces on said extension springs comprises
a common translating crossbar coupled to said extension springs;
a button rotatable within said housing and adapted to be rotated from without said housing; and
a cam affixed to said button within said housing;
said cam being coupled to said translating crossbar so that rotational movement of said button causes translating movement of said crossbar.

4,249,152

MAGNETIC TRIP ADJUSTMENT BASED ON SPRING LOAD VARIATION

Victor R. Vazquez, Carolina, P.R., assignor to Sylvania Circuit Breaker Corporation, Canovanas, P.R.

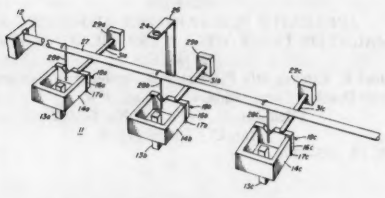
Filed Jul. 25, 1979, Ser. No. 60,693
Int. Cl.[3] H01H 71/74
U.S. Cl. 335—176 2 Claims

1. In a combination, in a three pole circuit breaker, including a housing,
three electrical conductors, one for each pole;
three magnets, each magnet in close proximity to a respec-

tive one of said conductors so as to generate a magnetic field therein when excessive current flows through said respective conductor;

three armatures, each armature adapted to be attracted by a respective one of said magnets when a magnetic field is generated in said respective magnet,

three springs, each adapted to apply a force to restrain a respective armature from attraction by its respective magnet; and



means for simultaneously varying said forces on said springs so as to vary a magnetic level for said circuit breaker, the improvement wherein said means for simultaneously varying forces on said springs comprises

a common rotatable crossbar coupled to said three springs;

a button rotatable within said housing and adapted to be rotated from without said housing;

a cam affixed to said button, within said housing; and

link means, responsive to movement of said cam, for causing rotatable movement of said crossbar.

4,249,153

RING TRANSFORMER FOR RESISTANCE BUTT WELDERS

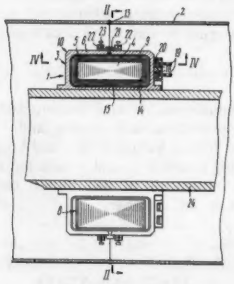
Boris E. Paton, ulitsa Chkalova, 41k-a, kv. 26; Vladimir K. Lebedev, ulitsa Engelsa, 25, kv. 12; Sergei I. Kuchuk-Yatsenko, ulitsa Filatova, 1/22, kv. 47; Vasily A. Sakharnov, ulitsa Solomenskaya, 41, kv. 93; Boris A. Galyan, ulitsa Lenina, 88/92, kv. 110; Stanislav D. Dobrovolsky, ulitsa Zhukova, 22, kv. 7, and Mikhail N. Sidorenko, ulitsa Vladimirskaya, 98/3, kv. 54, all of Kiev, U.S.S.R.

Filed Mar. 21, 1979, Ser. No. 22,441

Claims priority, application U.S.S.R., Jun. 15, 1978, 2621709[1]

Int. Cl.[3] H01F *27/30*

U.S. Cl. 336—82 **7 Claims**



1. A ring transformer for resistance butt welders, comprising:

a housing;

a plurality of sections, each comprising a non-closed magnetic core having end faces and sides confined by said end faces, a first insulating spacer arranged on said sides of said magnetic core, a primary winding portion wound around said first insulating spacer, a second insulating spacer applied onto said primary winding portion, a tubular secondary winding portion, having a first non-closed end and a second non-closed end and contacting with said second insulating spacer, and an insulator insulating said non-closed ends of said secondary winding portion;

each of said sections being mounted on said housing and so arranged with respect to the other sections that said end faces of its non-closed magnetic core are in contact with those of said non-closed magnetic cores of the two adjacent sections, whereby all the non-closed magnetic cores of all the sections make up a closed magnetic core of said transformer, whose shape essentially corresponds to that of articles to be welded, the primary winding portion of each section being connected to those of the other sections to make up a primary winding of said transformer, arranged on said first insulating spacer of the closed magnetic core and uniformly extending along the butts of articles to be welded, whereas the secondary winding portion of each section and those of the other sections A, have aligned first and second nonclosed ends and abutting tube ends to make up a secondary winding of said transformer, arranged on said second insulating spacer of said primary winding and uniformly extending along the butts of articles to be welded.

4,249,154

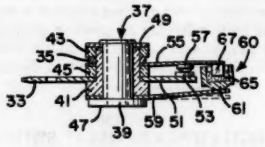
TEMPERATURE RESPONSIVE ELECTRICAL SWITCHING DEVICE AND METHOD OF CALIBRATING

Jack W. Grable, Dayton, Ohio, assignor to Emerson Electric Co., St. Louis, Mo.

Filed Feb. 12, 1979, Ser. No. 11,215

Int. Cl.[3] H01H *37/20*

U.S. Cl. 337—360 **8 Claims**



4. An electrical switching device for maintaining an electrically conductive path between first and second electrical connectors when the switching device is below a predetermined threshold temperature and for opening said electrically conductive path when the switching device is above the predetermined threshold temperature, comprising:

electrically non-conductive switch mounting means,

stationary electrical contact means mounted on said mounting means,

movable electrical contact means mounted on said mounting means,

bimetal means, mounted on said mounting means, for deflecting in response to an increase in temperature, and

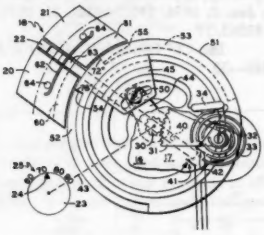
extensible actuator means, including a quantity of cured resin cured so as to engage and be secured to said movable electrical contact means, whereby said actuator means will contact said bimetal means and move said movable electrical contact means out of electrical contact with said stationary electrical contact means as said bimetal means deflects after said predetermined temperature is reached, thus opening said electrically conductive path between said first and second electrical connectors, and whereby the relative position of said actuator means and said movable electrical contact means during curing of said cured resin fixes the dimension of said actuator means in a direction extending between said bimetal means and said movable electrical contact means.

4,249,155

HEATING AND COOLING THERMOSTAT WITH LIMITING ACTION SELECTED BY THE CHANGEOVER SWITCHING APPARATUS

Richard E. Fitzgerald, Minneapolis, and Dennis R. Grabowski, Dakota, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 30, 1979, Ser. No. 70,756
Int. Cl.[3] H01H 37/12
U.S. Cl. 337—360 7 Claims



1. An improvement to a thermostat adapted for controlling either heating or cooling apparatus in response to a temperature responsive means connected to have its control point temperature selected by a single temperature selector member and having a first temperature range of operation for heating operation and a second temperature range of operation for cooling operation and a separate changeover means for selecting either heating or cooling operation, the improvement comprising,

limit means for said single temperature selector, and

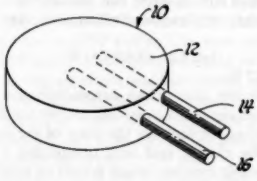
means for connecting said changeover means to said limit means for selecting either said first range or said second range of operation.

4,249,156

UNCOMPENSATED LOW TEMPERATURE STOICHIOMETRIC AIR/FUEL RATIO EXHAUST GAS SENSOR

Adolph L. Micheli, Mt. Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 9, 1979, Ser. No. 19,276
Int. Cl.[3] H01L 7/00
U.S. Cl. 338—34 2 Claims



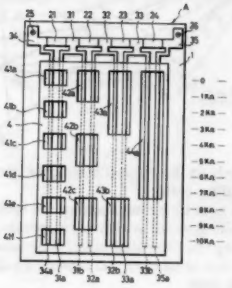
1. In a resistive-type exhaust gas oxygen sensor exhibiting a significant change in electrical resistance of titanium oxide in response to deviation in exhaust gas content from stoichiometry, the improvement comprising an interlocked, highly irregular flake-like microstructure in the titanium dioxide having a surface area greater than about 3 square meters per gram for enhancing equilibration and more significant electrical resistance change at lower temperatures.

4,249,157

VARIABLE IMPEDANCE DEVICE

Nozomu Sakamoto, Tokyo, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Mar. 30, 1979, Ser. No. 25,735
Claims priority, application Japan, Mar. 30, 1978, 53-37134
Int. Cl.[3] H01C 10/38
U.S. Cl. 338—176 15 Claims



1. A variable impedance device, comprising:

a substrate;

an impedance element carried on said substrate;

a plurality of pair of conductor leads disposed on said substrate and extending from predetermined portions of said impedance element;

a group of slide members corresponding to respective pairs of said conductor leads and adapted to slide on said respective pairs, said each slide member being adapted to short-circuit the corresponding pair of said conductor leads; and

insulating means disposed on slide paths of said slide members and for preventing contact between said slide members and said conductor leads at predetermined positions on said conductor leads.

4,249,158

AIRCRAFT TAKE-OFF AND LANDING SYSTEM AND METHOD FOR USING SAME

Nikolai G. Basov, ulitsa Dmitria Ulyanova, 3, kv. 113, Moscow; Igor A. Berezhnoi, ulitsa Tukhachevskogo, 253, kv. 18; Vyacheslav S. Vekshin, ulitsa Partizanskaya, 94, kv. 56, both of Kuibyshev; Vladimir A. Danilychev, ulitsa Profsojuznaya, 111 korpus 3, kv. 226, Moscow; Albert I. Elatontsev, ulitsa Sovetskoi Armii, 163, kv. 16, Kuibyshev; Vladimir V. Ignatiev, prospekt Kirova, 293, kv. 40, Kuibyshev; Vitaly D. Karyshev, ulitsa Sportivnaya, 5-25, kv. 5, Kuibyshev, and Alexandr K. Togulev, ulitsa Jubileinaya, 8, kv. 71, Kuibyshev, all of U.S.S.R.

Filed May 6, 1977, Ser. No. 794,655
Claims priority, application U.S.S.R., Oct. 22, 1974, 2069154[1]
The portion of the term of this patent subsequent to Dec. 13, 1994, has been disclaimed.
Int. Cl.[3] B60F 1/26
U.S. Cl. 340—26 3 Claims

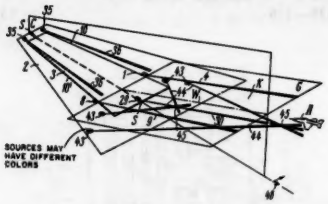
1. A method of aircraft take-off or landing through the use of a take-off and landing system, comprising the following steps:

bringing an aircraft into the coverage of at least one directed reference produced by electromagnetic pencil beams with a divergence less than 5° and a wavelength lying within preselected wavelength limits, one of which is visible and perceived on board the aircraft as a symbol in space of a specified configuration determined by said beams;

detecting on board the aircraft said beams forming said symbol;

inferring the magnitude and direction of distortions of the specified symbol configuration from the magnitude and direction of the aircraft's deviations from the course and glide slope of an estimated take-off or landing path;

correcting the distorted symbol by maneuvering the aircraft so that the beams form a symbol configuration which



corresponds to the aircraft's being on the estimated take-off or landing path;

piloting the aircraft by maintaining the specified configuration of said symbol, which corresponds to the aircraft's flight along the estimated take-off or landing path; and

performing one of take-off and landing by flying the aircraft along said path.

4,249,159

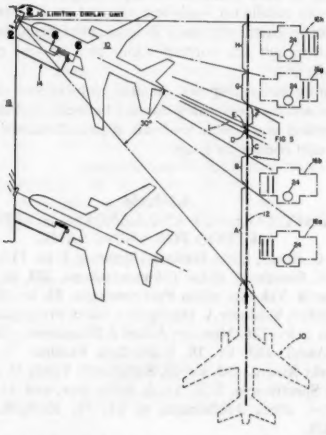
AIRCRAFT DOCKING SYSTEM

Thomas A. Stasko, 6806 N. 7th St., Phoenix, Ariz. 85014

Filed Oct. 17, 1977, Ser. No. 842,468

Int. Cl.[3] G08G *5/06*; B64F *1/18*; G08G *1/14*

U.S. Cl. 340—26 **10 Claims**



1. An aircraft ground guidance and parking system comprising a lighting display unit adapted to be mounted at a parking station pointing directly down the on-course center line to be followed by the incoming taxying aircraft and at an elevation for viewing from the cockpit of the aircraft, said lighting display unit comprising:

an array of more than one traffic light of different characteristics facing the incoming aircraft,

a control unit for selectively controlling said lights,

means for scanning a series of successive indicia on a lateral surface of the aircraft as it passes by a predetermined location at said parking station and thereby generating successive positions of the aircraft as it closes on said parking station, and

means for transmitting said signals to said control unit,

said control unit being responsive to said signals selectively to illuminate one or more of said traffic lights in predetermined modes of operation to signal the pilot of the aircraft when to slow and to halt the aircraft.

4,249,160

VEHICLE MOUNTED LIGHT ACTIVATED CONTROL SYSTEM

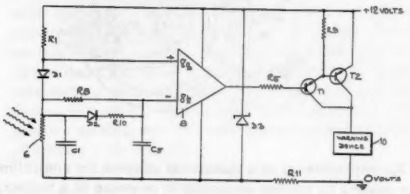
Graham R. Chilvers, 29 Higher Audley Ave., Torquay, Devon, England

Continuation-in-part of Ser. No. 775,597, Mar. 8, 1977, abandoned. This application May 26, 1978, Ser. No. 909,816

Claims priority, application United Kingdom, Nov. 21, 1975, 48023/75; Jan. 5, 1976, 193/76; Jul. 21, 1976, 30261/76; Oct. 19, 1977, 53562/77

Int. Cl.[2] G08G *1/00*; B60Q *1/26*

U.S. Cl. 340—33 **4 Claims**



1. A light activated control system comprising:

a comparator circuit having first and second inputs;

photoelectric ambient light sensing means;

means connecting the sensing means to the first comparator input to provide a signal voltage level at said input representative of the instantaneous output of the sensing means;

capacitive means connected to the second comparator input and to the sensing means for averaging continuously the output of the sensing means to provide at said second input a continuously varying reference voltage level;

triggering means connected to the output of the comparator circuit, and

warning means connected to the triggering means and controlled by the comparator means through the triggering means, whereby the warning means are triggered into operation by the triggering means when the light intensity at the sensing means increases at a rate such that the said signal voltage level exceeds the said reference voltage level, to cause operation of the warning means.

4,249,161

LOCK FOR THE DOORS OF AUTOMOBILES

Dietrich F. A. Mohnhaupt, Bassins, Switzerland, assignor to Saseb Aktiengesellschaft, Eschen, Liechtenstein

Filed Apr. 2, 1979, Ser. No. 25,945

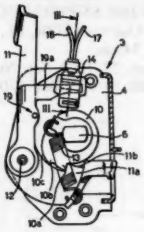
Claims priority, application Switzerland, Apr. 13, 1978, 3944/78

Int. Cl.[3] G08B *21/00*

U.S. Cl. 340—52 D **7 Claims**

1. A lock for the door of an automobile, the lock being provided with an electrical signalling circuit for indicating to the driver whether the lock for the door of the automobile is open or partially closed, said lock comprising a supporting body and a movable member which is held by said body and is able to assume a first position when the lock is closed, a second position when the lock is partially closed, and a third position when the lock is open, the lock being further provided with a magnetic switch, contained in said electrical signalling circuit, said magnetic switch including a reed relay, which is held by said supporting body and is connected to said electrical signalling circuit, said switch also including a permanent magnet carried by said supporting body near said reed relay and said magnet having the characteristic of causing the contacts contained in said relay to be closed, said movable member being

provided with a projection which is interposed between said reed relay and said permanent magnet when said movable member is in said first position so as to interrupt the magnetic



flux lines between said magnet and the contacts of the relay so as to cause said contacts to open, and means controlling said movable member to cause said switch contacts to close when said movable member is in said second and third position.

4,249,162

REMOTE CONTROL SWITCH ASSEMBLY

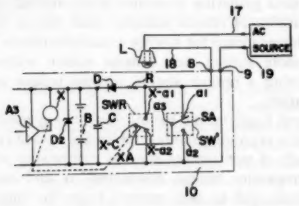
Takeshi Nakamura, Uji, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed Apr. 13, 1979, Ser. No. 29,652

Claims priority, application Japan, Apr. 19, 1978, 53-51503[U]

Int. Cl.[3] **H04Q** *9/10;* **H04B** *11/00*

U.S. Cl. 340—148 **11 Claims**



1. A switching assembly for connecting and disconnecting an electrical appliance to a source of electrical power, comprising:

a manually operable switch coupled between said appliance and said power source and switchable between an OFF and an ON state;

a remote control switch coupled in parallel with said manually operable switch and between said appliance and said power source, said remote control switch being switchable between an OFF and an ON state, said remote control switch and said manually operable switch being connected to said appliance and said power source in such a manner that said appliance is connected to said power source whenever either of said switches is in its ON state and is disconnected from said power source when both of said switches are in their OFF state;

signal receiving means for switching said remote control switch from that one of said OFF and ON states said remote control switch was last in into the other of said OFF and ON states each time said signal receiving means receives an acoustically radiated control signal;

battery means for powering said signal receiving means; and

means for coupling said power source to said battery means so as to charge said battery means whenever both said manually operable switch and said remote control switch are in said OFF state.

4,249,163

AUTOMATIC MONEY DISPENSER AND METHOD

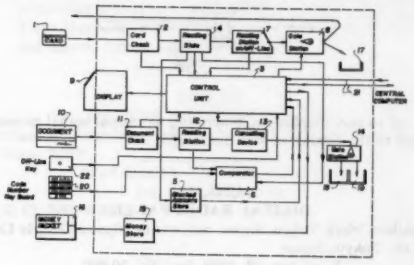
Thomas Maurer; Helmut Groettrup, and Harald Helmrich, all of Munich, Fed. Rep. of Germany, assignors to G.A.O. Gesellschaft für Automation und Organisation mbH, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 834,900, Sep. 20, 1977, abandoned. This application May 7, 1979, Ser. No. 36,737

Claims priority, application Austria, Sep. 29, 1976, 7226/76

Int. Cl.[3] **H04Q** *9/00;* **G06K** *5/00;* **G06F** *7/00*

U.S. Cl. 340—149 A **10 Claims**



1. In an automatic money dispenser, operable with an identification card and either a code number or a check, connected to a bank central computer having access to all data about customers of the bank relavant to a dispensation of money, the improvement comprising: in combination, an identification card containing automatically readable information identifying whether the data of the customer are stored in the control computer carrying all data necessary for dispensing of money, checking means in said dispenser operable to read said automatically readable information and verify completeness and genuiness of said information, said checking means responsive to insertion of said identification card into said dispenser by a customer; control means in said dispenser responsive to such reading and verifying, responsive to whether or not the central computer is in an operable condition, and responsive to whether the data on the customer are stored in the central computer, operable to determine whether or not dispensation of money from said dispenser is possible with said identification card and with a customer code number or with said identification card and a check carrying all data necessary for dispensing of money, dispensation of money being possible, if the data on the customer are stored in the control computer, the central computer is in an operable condition, the card information is verified and the code number is used, or, when the central computer is inoperable or the data on the customer are not stored in the central computer, if the card information is verified and the check is used; and display means operable, responsive to said determination, to display the determination to the customer for corresponding operation of said dispenser.

4,249,164

FLOW METER

Vincent V. Tivy, 17622 Merry Oaks Trail, Chagrin Falls, Ohio 44022

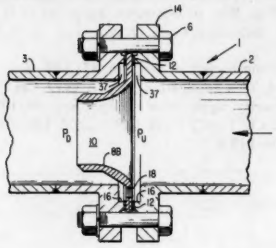
Filed May 14, 1979, Ser. No. 38,926

Int. Cl.[3] **G01F** *1/26;* **H01V** *7/00;* **G08C** *19/00*

U.S. Cl. 340—870.3 **10 Claims**

1. A delta-P transmitter for producing an output signal varying in functional relationship with the rate of fluid flow through a conduit, comprising, a primary element consisting of a rigid disk for installation in the conduit and provided with an orifice for the flow of fluid therethrough producing a differential pressure between the inlet and outlet sides of said disk varying in functional relation to the rate of fluid flow, a first aperture between the inlet and outlet sides of said disk, a first

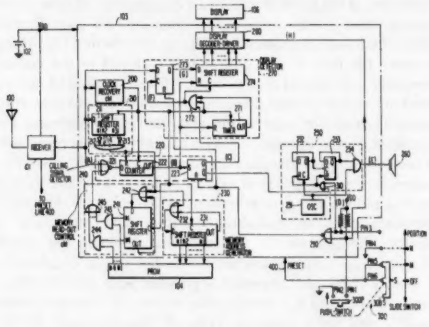
flexure diaphragm sealing said aperture flexing in proportion to said differential pressure and a transducer operatively connected to said diaphragm generating an output signal proportional to the flexing of said diaphragm.



4,249,165
DIGITAL RADIO PAGER

Toshihiro Mori, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Apr. 18, 1979, Ser. No. 30,980
Claims priority, application Japan, Apr. 18, 1978, 53-51687[U]
Int. Cl.³ H04B *1/16*
U.S. Cl. 340—311 **6 Claims**

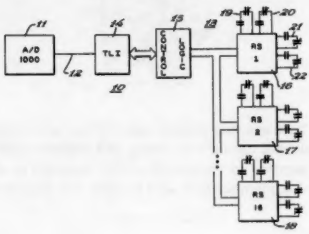


3. A radio pager unit comprising:
(a) first means for synchronizing said pager unit with an incoming signal having identification and data portions;
(b) second means responsive to said first means for receiving said identification signal;
(c) third means responsive to said second means for comparing said identification signal to a preselected identification code and for producing and storing a first control output when said identification signal corresponds to said identification code;
(d) fourth means for receiving and storing said data signal under the control of said first control output;
(e) first and second switch means each having first and second states;
(f) first indicator means for indicating the presence of said first control output:
(i) when said first switch means is initially in said first state, said first indicator means immediately indicating the presence of said first control output;
(ii) when said first switch means is initially in said second state, said first indicator means indicating the presence of said first control output upon switching said first switch means from said second state to said first state;
(g) second indicator means for indicating said data signal in response to said second state of said second switch means, whereby said data signal is maintained in said fourth means when said second switch means is in said first state.

4,249,166
LINE SUPERVISION

Richard M. Schultz, Oakwood Hills, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 25, 1978, Ser. No. 954,517
Int. Cl.³ G08B *29/00*; G06F *7/00*; H04Q *5/00*
U.S. Cl. 340—506 **11 Claims**



1. A communication system for communicating between a central processing unit and remote stations comprising:
central processing means for transmitting remote station address messages;
a communication line connected to said central processing unit for conveying said remote station address messages;
data gathering apparatus means connected to said communication line for receiving said remote station address messages, said data gathering apparatus means including
a plurality of remote stations, each station having module address means for storing a module address unique to said remote station, and remote station address means for storing a remote station address unique to said remote station,
control logic means having sequencing means for sequentially supplying module addresses to said remote stations, each of said remote stations comprising module address comparator means connected to said module address means and to said control logic for supplying to said control logic the remote station address when there is a match between the module address stored in the remote station and the module address generated by said control logic means,
remote station address comparator means for comparing the remote station address received from said central processing means to the remote station address of the selected remote station.

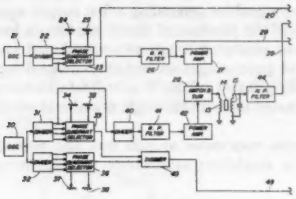
4,249,167
APPARATUS AND METHOD FOR THEFT DETECTION SYSTEM HAVING DIFFERENT FREQUENCIES

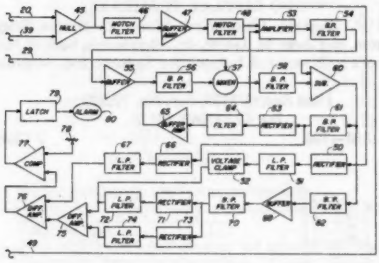
Edwin C. Purinton, Oreland; Robert L. Auger, Lansdale, and Carl S. Holzinger, Coopersbury, all of Pa., assignors to Magnavox Government and Industrial Electronics Company, Fort Wayne, Ind.

Continuation of Ser. No. 907,539, May 19, 1978, which is a continuation of Ser. No. 698,249, Jun. 21, 1976. This application Jun. 5, 1979, Ser. No. 45,808
Int. Cl.³ G08B *13/18*
U.S. Cl. 340—572 **31 Claims**

1. A system for detecting presence of a tag within an interrogation zone, the tag having a high permeability material, comprising: means to generate a first frequency signal; means to generate a second frequency signal lower in frequency than the first frequency signal; means for combining the first and second frequency signals and for applying the combined signals to the

interrogation zone so that the combined signals cause sidebands to be emitted by the tag when the tag is present within the interrogation zone; means to sense the sidebands emitted by the tag; filter means to receive the sidebands and to filter out the first and second frequency signals; mixer means to mix the first frequency signal and the sidebands to obtain base frequencies equal to the first frequency minus the frequency of the sidebands; means to determine a difference in amplitude between at least two of the base frequencies; and means to compare the difference in amplitude with a pre-established reference level so that an alarm can be generated when the difference in amplitude exceeds the pre-established level thereby indicating presence of the tag within the interrogation zone.

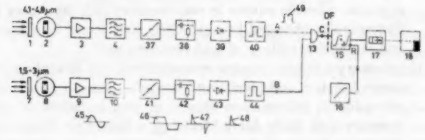




4,249,168
FLAME DETECTOR

Jürg Muggli, Männedorf, Switzerland, assignor to Cerberus AG, Männedorf, Switzerland

Filed Apr. 20, 1979, Ser. No. 31,783
Claims priority, application Switzerland, Apr. 25, 1978, 4467/78
Int. Cl.³ G08B *17/12*
U.S. Cl. 340—578 **18 Claims**



1. A flame detector of the type having a first circuit for sensing radiation comprising the flame-resonant radiation wavelength which is characteristic of carbon dioxide and in response thereto generating an electrical alarm signal for activating an alarm means, the first circuit comprising a photoelectric means for producing a first circuit signal and a band-pass filter which passes the first circuit signal only at the flicker frequency of the flame, wherein the improvement comprises:

a second circuit for sensing the presence of radiation of the same flicker frequency as that sensed by the first circuit, said second circuit comprising in series:

a photoelectric means (7, 8) which senses radiation of a selected wavelength range within the radiation range between near ultra-violet to near infra-red to produce a second circuit signal, and

a band-pass filter (10) having the same flicker frequency pass band as the band-pass filter of the first circuit, and

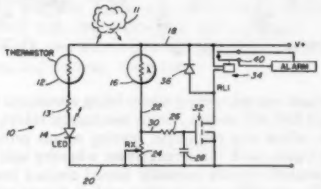
connecting means (13, 14) interconnecting said first and second circuits and comprising:

means for comparing said first and second circuit signals and permitting activation of said alarm by an alarm signal only when there are present simultaneous first circuit signals and second circuit signals in the same direction.

4,249,169
OPTICAL SMOKE DETECTOR

William J. Malinowski, Johnson St., P.O. Box 274, Bryantville, Mass. 02327

Filed May 18, 1979, Ser. No. 40,110
Int. Cl.³ G08B *17/10*
U.S. Cl. 340—630 **6 Claims**



1. An optical smoke detector, having an examination zone through which smoke is adapted to pass, comprising

(a) a light source in position to illuminate said zone and any smoke therein,

(b) a photo-resistive light detecting cell visible to said zone and electrically connected in parallel circuit to said light source, said cell characterized by a temperature coefficient that increases the resistance of said cell with an increase in ambient temperature and decreases the resistance of said cell with an increase in ambient temperature,

(c) a resistance element electrically connected in series with and on the input side of said source and characterized by a temperature coefficient that decreases the resistance of said element with an increase in ambient temperature and increases the resistance of said element with a decrease in ambient temperature, and,

(d) alarm means including a voltage responsive switching device operatively connected to said light detecting cell on the output side thereof and adapted to generate an alarm when the resistance of said light detecting cell exceeds a predetermined level,

(e) said light source being a monochromatic light emitting diode characterized by a light output that increases and decreases linearly with increases and decreases in applied current.

4,249,170
ANNUNCIATOR

Edward J. Cham, Howland Township, Trumbull County, and Ronald M. Stefanick, Hubbard, both of Ohio, assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 9, 1979, Ser. No. 82,831
Int. Cl.³ G08B *21/00*; H01H *47/00*
U.S. Cl. 340—646 **8 Claims**

1. An electrical transformer comprising:

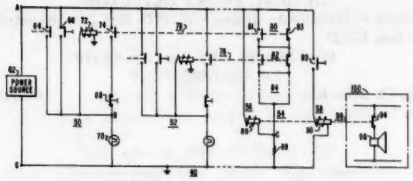
a magnetic core;

electrical windings disposed in inductive relation with said magnetic core;

at least first and second sensing means responsive to first and second predetermined operating parameters of said transformer respectively, said first and second sensing means providing an alarm signal when its associated operating parameter deviates from a predetermined range of operation;

annunciating means including at least first and second electro-mechanical relays, each of said relays having at least one normally open and one normally closed contact, respectively, arranged such that the normally closed contact breaks before the normally open contact makes when the relay is operated, said normally open and normally closed contacts of each of said first and second relays being connected electrically in parallel forming first and second contact circuits, respectively;

means connecting said first and second contact circuits in series to form a pulse circuit;



said first and second sensing means being connected to operate said first and second electro-mechanical relays, respectively, when said respective sensing means provides an alarm signal, with the arrangement whereby said respective contact circuit's normally closed contact breaks before the normally open contact makes, causes said pulse circuit to provide a first signal of predetermined duration;

first reset means for providing a second signal when said first reset means is activated; and

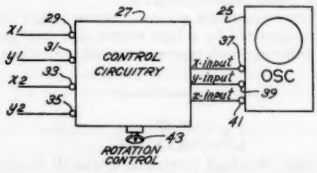
bistable switching means having first and second positions and at least one contact adapted for connection to external protective apparatus, said bistable switching means being responsive to said pulse circuit and said first reset means, switching to its first position in response to said first signal, and switching to its second position in response to said second signal, the switching of said bistable switching means opening and closing said at least one contact.

4,249,171

VECTOR DISPLAY SCOPE

Alfred J. Batcher, Clawson, Mich., assignor to Sun Electric Corporation, Crystal Lake, Ill.

Filed Sep. 12, 1979, Ser. No. 75,526
Int. Cl.[3] **G08B** *5/36*
U.S. Cl. 340—722 **9 Claims**



1. A vector display scope for visually displaying a vector wherein the vector is rotatable about its origin point via manual control by the user, comprising:

means providing a pair of point signals defining a vector, one of said point signals having a magnitude representative of an X coordinate and the other of said point signals having a magnitude representative of a Y coordinate;

signal generator means for generating a sweep signal as a function of time; said sweep signal having a continuous waveshape portion of a constant slope;

sin/cos function generator means for generating a cosine signal functionally related to an angle ϕ and a sine signal functionally related to said angle ϕ;

control means manually operable for varying said angle ϕ;

rotational function generator means responsive to said cosine signal, said sine signal, said pair of point signals and said sweep signal for generating a first output signal representative of the product of the X coordinate location of said vector rotated through an angle ϕ and said sweep signal, and generating a second output signal representative of the product of the Y coordinate location of said vector rotated through the angle ϕ and said sweep signal; and

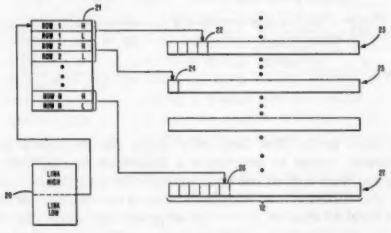
display means responsive to said first and second output signals for displaying said vector rotated through said angle ϕ.

4,249,172

ROW ADDRESS LINKING CONTROL SYSTEM FOR VIDEO DISPLAY TERMINAL

Richard R. Watkins, Chelmsford, Mass.; C. Steven Briggs, Kingston, and John M. Doyle, Jr., Merrimack, both of N.H., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Sep. 4, 1979, Ser. No. 72,500
Int. Cl.[3] **G06F** *3/153*
U.S. Cl. 340—726 **2 Claims**



1. A hardware/firmware logic control system for addressing video information rows randomly stored in a memory unit and having vertically and horizontally varying first character byte address entry points in said memory unit, wherein said logic control system, a CRT control system, a CPU, a timing control system and said memory unit comprise a video display system, said logic control system which comprises:

(a) link address counter means receiving link address information from said memory unit under said CPU control and responsive to said timing control system for addressing a location in a memory link table stored in said memory unit, wherein entries in said memory link table may be dynamically changed by said CPU to effect a horizontal and vertical scrolling of said memory unit;

(b) memory address counter means responsive to said timing control system and receiving from said memory unit memory address information stored in said location of said memory link table for addressing a first and successive character bytes of a video information row randomly stored in said memory unit, wherein said first character byte may be positioned at any location in said memory unit;

(c) DMA cycle request means responsive to said CPU for requesting a DMA cycle from said timing control system during which video information may be transferred between said memory unit and said logic control system; and

(d) DMA cycle control means responsive to said CPU, and to a DMA cycle acknowledgement signal from said tim-

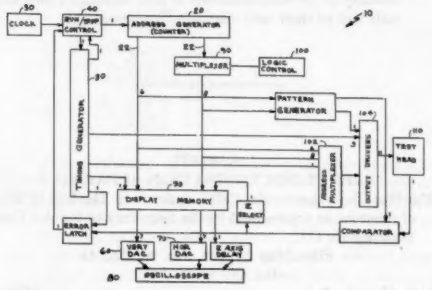
ing control system for loading and incrementing said link address counter means and said memory address counter means to address respectively successive locations in said memory link table, and first and successive character bytes of each video information row stored in said memory unit comprising a display page for display by said CRT control system.

4,249,173

LOGIC SIGNALS CONTROL SYSTEM

James A. Lockhart, Jr., Basking Ridge, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Filed Sep. 14, 1979, Ser. No. 75,588
Int. Cl.[3] G08B 5/36
U.S. Cl. 340—731 **7 Claims**



1. Signal processing apparatus comprising

a counter having a plurality of output lines which can carry logic signals,

a clock coupled to said counter for causing said counter to count and generate a sequence of logic signals on said output lines,

display means including means for generating a raster scan therein,

digital to analog converter means for generating control signals for generating said raster scan and coupled to said display means,

a plurality of said lines coupled directly to said converter means, and

a control circuit coupled between the others of said lines and said converter means, said control circuit being operable to modify the logic signals provided at said converter means for generating raster scan matrices of different capacities.

4,249,174

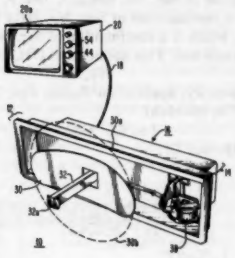
AIRCRAFT WEATHER RADAR SYSTEM

George A. Lucchi, and Ramon H. Aires, both of Granada Hills, Calif., assignors to RCA Corporation, New York, N.Y.

Filed May 31, 1979, Ser. No. 44,088
Int. Cl.[3] G01S 13/95; H01Q 1/28
U.S. Cl. 343—5 W **6 Claims**

1. In an airborne weather radar system of the type comprising an antenna means, an indicator means, and receiver/transmitter (R/T) means, said R/T means comprising a modulator adapted to produce periodic bias pulses of a predetermined time duration, means responsive to each bias pulse for producing a radio frequency signal of a given peak power and of time duration corresponding to said predetermined time duration, said antenna means being responsive to said radio frequency signal for radiating said signal and for receiving return signals, said R/T also comprising local oscillator means for producing a local oscillator signal, means for subtractively mixing said return signals and said local oscillator signal for producing an intermediate frequency (IF) signal, and amplifying means responsive to said IF signal for producing a signal which, as a function of time, represents the strength of said return signals, said amplifying means having a bandwidth which is a predetermined function of said time duration, wherein the improvement comprises:

(a) said means producing said radio frequency signal producing said radio frequency signal having a peak power not in excess of 2000 watts; and



(b) said modulator producing pulses of time duration not less than 8 microseconds; and

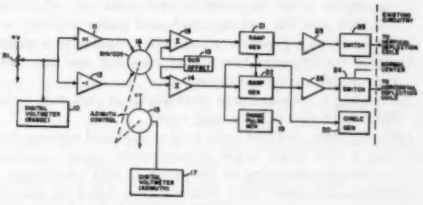
(c) said amplifier means adapted to have a bandwidth not greater than 1.5 divided by said modulator pulse time duration, said bandwidth and said time duration being in hertz and seconds, respectively.

4,249,175

ELECTRONIC SYMBOLOGY GENERATION FOR RADAR PLAN POSITION INDICATOR (PPI) DISPLAYS USING ROTATING COILS

Floyd M. Belrose, and Augustus H. Green, Jr., both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 4, 1979, Ser. No. 71,976
Int. Cl.[3] G01S 7/22
U.S. Cl. 343—5 EM **4 Claims**



1. In a radar system having a display of target returns the improvement comprising the method of generating a marker on the display; utilizing a first control means to move said marker on the display in accordance with range; utilizing a second means to move said marker in accordance with azimuth; positioning the marker on a target return; associating readout means with said first control means so as to give the range of the marker and therefore the selected target return; associating readout means with said second control means so as to give the azimuth of said marker and therefore the azimuth of said selected target return; and providing an offset of the marker on the display in accordance with a site located remotely from the radar so as to give the readings in range and azimuth with respect to said site instead of said radar.

4,249,176
FOLLOWING DISTANCE MEASURING COMMUNICATION SYSTEM

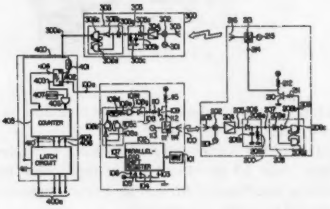
Kazuo Oishi, Oobu; Matatoyo Hinachi, Nagoya; Takeshi Matsui, Kariya, and Masao Kotera, Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Continuation of Ser. No. 868,227, Jan. 9, 1978, abandoned, which is a continuation of Ser. No. 760,019, Jan. 17, 1977, abandoned, which is a continuation of Ser. No. 536,991, Dec. 27, 1974, abandoned. This application Oct. 16, 1978, Ser. No. 951,956

Claims priority, application Japan, Jan. 28, 1974, 49-12094; Feb. 11, 1974, 49-16481

Int. Cl.[2] **G01S** *9/56*

U.S. Cl. 343—6.5 LC **10 Claims**



1. In the method of measuring the distance that a rear vehicle is following a front vehicle running in the same direction as said rear vehicle by measuring the time from transmission of an interrogation signal by the rear vehicle to receipt by the rear vehicle of a reply signal generated by a transponder in said front vehicle in response to said interrogation signal,

the improvement in said method of minimizing the probability of the rear vehicle erroneously receiving from a third vehicle approaching said rear vehicle from the opposite direction a similar interrogation signal instead of a responding reply signal from said front vehicle by differently coding said interrogation signals of said rear and third vehicles, comprising the steps of:

generating at said rear vehicle a pulse train including developing and continuously repeating a series of pulses having leading edge intervals coded by a first unique code for causing said pulse train to have a first predetermined pulse interval duration pattern in which contiguous ones of said successive pulse intervals in said train are of different duration and for causing each said pulse interval to be greater than a given duration corresponding to a radiated signal transmission turnaround time for said accurately measurable maximum distance,

developing a measurement start signal at said rear vehicle from each said pulse in said train,

radiating from said rear vehicle in at least said running direction a first pulse wave interrogation signal containing pulses corresponding to the pulses in said pulse train,

receiving said pulse wave interrogation signal by said transponder at said front vehicle and radiating therefrom in said opposite direction a respective reply pulse in response to each said corresponding pulse in said pulse wave interrogation signal,

receiving said reply pulses at said rear vehicle,

developing at said rear vehicle a respective measurement end signal from each received reply pulse,

successively measuring the duration of the resulting non-overlapping successive time intervals occurring between each measurement start signal and its corresponding measurement end signal,

converting the successive time interval durations into respective distance representations, and

radiating in said opposite direction from said approaching third vehicle toward said rear vehicle a second pulse wave interrogation signal containing a second pulse train including a continuously repeating second series of pulses having leading edge intervals coded by a second unique code different than said first code for causing said second pulse train to have a second predetermined pulse interval duration pattern similar to said first pattern in that each pulse interval is greater than said given duration and in that contiguous ones of said successive pulse intervals in said second train are of different duration but different in that the sequences of said different duration pulse intervals in the respective pulse series are different for reducing the probability of a pulse in said second interrogation signal being effectively received during the occurrence of any of said successive time intervals between corresponding measurement start and end signals while said third vehicle is approaching said rear vehicle, thereby enhancing the validity of the measurements of said successive time intervals and of their said distance representations.

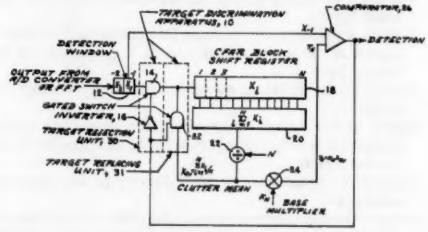
4,249,177
TARGET DISCRIMINATION APPARATUS

Pin-Wei Chen, Sunnyvale, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 3, 1979, Ser. No. 35,743

Int. Cl.[3] **G01S** *7/30*

U.S. Cl. 343—7 A **6 Claims**



1. A target discrimination apparatus for a constant false alarm rate detector comprising in combination:

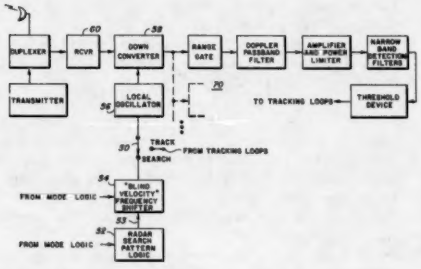
A CFAR detector means to receive a digital input signal, said CFAR detector means comprising a constant false alarm rate detector, said CFAR detector means having a detection window, said detection window comprising a plurality of detection cells, said detection window providing a target signal, said CFAR detector means having a plurality of clutter cells to receive target clutter data from said digital input signal, said CFAR detector means averaging said target clutter data to a clutter average signal to provide a clutter threshold signal, comparator means comparing said clutter threshold signal and said target signal to detect a target, said comparator means providing a detection signal when said target signal exceeds said clutter threshold signal, and,

a target discrimination means connected between said detection window and said plurality of clutter cells, said target discrimination means receiving said detection signal, said target discrimination means in response to said detection signal prevents said target signal from entering said plurality of clutter cells, once said target signal passes through said detection window, said CFAR detector means enables said target discrimination means to pass target clutter data to said plurality of clutter cells.

4,249,178
APPARATUS FOR ELIMINATING BLIND VELOCITIES IN MTI RADARS

Walker Butler, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 12, 1979, Ser. No. 84,262
Int. Cl.[3] G01S *13/52*
U.S. Cl. 343—7.7 **2 Claims**



1. A method of reducing a blind velocity problem in an MTI coherent pulsed Doppler radar system, comprising the steps of:

searching first for a target utilizing a first local oscillator frequency which characteristically produces a first series of blind velocity responses;

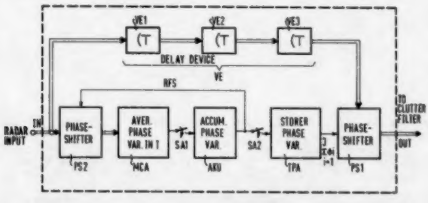
searching second for said target utilizing a second local oscillator frequency which characteristically produces a second series of blind velocity responses, said second series of blind velocity responses being of a different frequency characteristic than said first series of blind velocity responses; and

alternating between said searching first step and said searching second step until a target is acquired.

4,249,179
CIRCUIT ARRANGEMENT FOR DISPLACING THE CLUTTER SPECTRUM IN A RADAR RECEIVER

Peter Kolacny, Unterpfaffenhofen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 24, 1978, Ser. No. 927,283
Claims priority, application Fed. Rep. of Germany, Aug. 29, 1977, 2738832
Int. Cl.[3] G01S *7/28, 13/52*
U.S. Cl. 343—7 A **2 Claims**

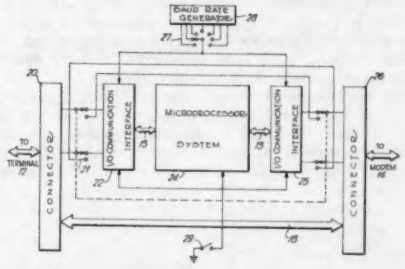


1. A circuit arrangement for a receiver of a pulse-Doppler-radar with a fixed clutter filter and with a pre-connected device for the displacement of the clutter spectrum and with a circuit for the determination of the mean change of the phase to prevent interfering low frequency received clutter signals during consecutive radar periods for producing a control signal for displacement of the clutter spectrum, in particular for radar devices with a non-constantly scanning antenna, characterized in that the received clutter signals are supplied by way of two parallel circuit branches to a phase shifting device (PS1) at the output of the circuit arrangement, with one circuit branch containing the circuit for determining the mean change of the clutter phase (MCA) and which is part of a regulating loop and contains a memory (TPA) which is connected to the output of the regulating loop, and the other circuit branch contains a delay line (VE) which has a delay which extends over several (n) radar periods and the regulating loop of the first circuit branch includes in series an adjustable phase shifting device (PS2), the circuit for the determination of the mean change of the clutter phase (MCA), an accumulator (AKU) and a return loop (RFS) from the output of the accumulator (AKU) to the adjustable phase shifting device (PS2) and the circuit for the determination of the mean change of the clutter phase (MCA) and the accumulator (AKU) are connected through a switch (SA1), which is closed at the end of a radar period, and the accumulator (AKU) and the following memory (TPA) are connected through a further switch (SA2) which is closed after a number of several (n) radar periods corresponding to the delay in the delay device (VE).

4,249,180
PAST DEPENDENT MICROCOMPUTER CIPHER APPARATUS

Gernot Eberle, Alymer; Anthony R. Walker, Stittsville; William Goodchild, Ottawa, and Patrice L. D. Humbert-Droz, Ottawa, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Sep. 20, 1978, Ser. No. 943,765
Int. Cl.[3] H04L *9/02*
U.S. Cl. 375—2 **30 Claims**



1. A past dependent method for selectively encrypting and deciphering digitally encoded data characters in a microcomputer having a read only memory for storing data words and operational instructions, a read/write memory for storing data, a microprocessor adapted to process data characters input thereto in an orderly and logical manner responsive to retrieved instructions, and bus means communicating the microprocessor with its memories, an input port and an output port, the method comprising the steps of:

(A) selecting a first origin having a predetermined address in a data field of the read only memory;

(B) translating the first origin to a second origin of the read only memory in response to at least one randomly generated character;

(C) storing the contents of the second origin in a key register in the read/write memory;

(D) retrieving the contents of said key register and performing a first logical operation with a cipher key thereof on a first data character input at the input port to transform said character into one of, a corresponding encoded encrypted and deciphered character at the output port;

(E) performing a variable sequence of iterative logical operations on the cipher key to generate a new key for transforming a succeeding encoded data character input at the input port, the number of iterative steps being determined by the position of the data character with respect to one of, a prede-

termined previously input control character and a previous physical or logical data character line end, comprising

(a) locating a predetermined first address in the read only memory corresponding to a location key of the retrieved contents of said key register,

(b) incrementing the first address by a predetermined number to generate a second address in the read only memory, and

(c) retrieving the contents of the second address and performing said first logical operation thereon with the first data character to generate a first calculated character representing a third address in the read only memory, and;

(F) storing the new key in the read/write memory.

4,249,181

CELLULAR MOBILE RADIOTELEPHONE SYSTEM USING TILTED ANTENNA RADIATION PATTERNS

William C. Lee, Denville, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 8, 1979, Ser. No. 18,455
Int. Cl.[3] H04B 7/00
U.S. Cl. 343—100 CS **8 Claims**

1. In a cellular mobile radiotelephone system in which a given set of radio channels is assigned for use in a predetermined adjacent-cell pattern (FIG. 1), which pattern is iteratively employed for providing radiotelephone service to a mobile service area, each cell having predetermined nominal boundaries and being served through at least one antenna site (31) in the cell, the improvement comprising

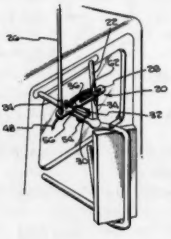
means (16) for operating an antenna (11,12) site (31) to produce in a predetermined region of a cell served thereby radiation such that a vertical-plane center-beam line of approximately maximum antenna gain is tilted to a predetermined angle (θ) below the horizontal for thereby illuminating more of the served cell region with a higher gain portion of the antenna radiation pattern (FIG. 3) than would be the case for a horizontally oriented center-beam line.

4,249,182

QUICK-DETACHABLE ANTENNA MOUNT

Orrin J. Rupley, 11225 1st Ave., Hesperia, Calif. 92345

Filed Dec. 18, 1978, Ser. No. 970,250
Int. Cl.[3] H01Q 1/32
U.S. Cl. 343—715 **7 Claims**



1. A manually, quickly-detachable and safely tiltable radio antenna mount for vehicles comprising:

first clamping means for fitting over a first support frame bar for an accessory mounted on the exterior of the vehicle, such as a rear view mirror or luggage rack, said first clamping means including two means for enclosing said bar in opposite directions at spaced points along said bar, said two enclosing means being spaced apart along the length of said frame bar, by a distance slightly greater than the thickness of the frame bar; whereby said clamping means can be assembled to or disassembled from said bar by rotating said spaced clamping means about a predetermined axis transverse to the axis of said bar;

second clamping means, resiliently coupled to said first clamping means, for engaging a second support frame bar and for restraining said first clamping means against rotation about said predetermined axis;

said first clamping means further including means for mounting said second clamping means at any desired orientation relative to said first clamping means while both of said enclosing means are engaging said first support bar;

means for securely fixing the selected angular orientation of said second clamping means relative to said first clamping means, whereby said mount may be securely fixed to said support bars whether said support bars are parallel to or are angled toward one another; and

means for mounting a radio antenna on said first clamping means;

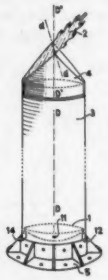
whereby said second clamping means may be manually resiliently released and said antenna tilted with said two engaging means safely retaining said antenna, and whereby said first clamping means may be manually rotated to quickly detach said antenna from the frame bars to safely store the antenna within the vehicle during short stops.

4,249,183

PERISCOPE ARRANGEMENT WITH PROTECTION AGAINST PARASITIC RADIATION

Nhu Bui Hai, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Apr. 11, 1977, Ser. No. 786,627
Claims priority, application France, Apr. 16, 1976, 76 11443
Int. Cl.[3] H01Q 15/16
U.S. Cl. 343—781 R **1 Claim**



1. A periscope arrangement with protection against parasitic radiations comprising:

a directive antenna having its maximal gain in a first direction;

a passive plane reflector associated with said antenna for receiving therefrom in the first direction plane waves and reflecting in a second direction the beam rays received from said antenna in said first direction; and

a metal sheath surrounding the beam path between said antenna and said passive reflector, said sheath including a hollow cylindrical tube and acting both as a support for said periscope arrangement and as a protection against parasitic radiation, a base section fixed to one of the ends of said tube for attaching said periscope arrangement to the ground, and a terminal section forming a mechanical link between said tube and said passive reflector, and in

the neighborhood of said passive reflector, surrounding both the beam reflected by the passive reflector when it is illuminated in said first direction, and the beam reflected by said passive reflector when it is illuminated in said second direction;

said passive reflector and said terminal section forming a hollow component with two apertures the first of which is disposed towards said antenna and the second of which forms, for said periscope arrangement, a radiating aperture whose periphery, over at least part of its length, has a castellated profile.

4,249,184

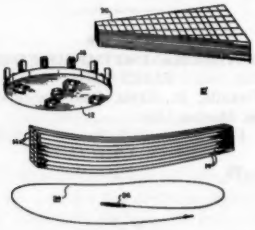
ANTENNA ARM AND METHOD FOR MAKING THE ARM

James K. Vines, 611 Farmview Rd., Park Forest South, Ill. 60466

Division of Ser. No. 887,354, Mar. 16, 1978. This application May 7, 1979, Ser. No. 36,631

Int. Cl.³ H01A *19/12*

U.S. Cl. 343—840 **3 Claims**



1. A parabolic disk antenna radial arm of the type that is to be used in a parabolic disk antenna, comprising a plurality of elongated normally flat elements of resilent material having smooth upper and lower normally flat surfaces, which are positioned in a flat surface to flat surface array and sandwiched and cemented to one another in an arcuate surface to surface arcuate configuration such that the arm is prestressed into a bowed configuration, said arm having one longitudinal end capable of being received and captivated by a disk antenna base and having its other longitudinal end adapted to receive a disk encircling captivating means.

4,249,185

PORTABLE, COLLAPSIBLE CUBICAL QUAD ANTENNA

Robert J. De Cesari, 3941 Mt. Brundage Ave., San Diego, Calif. 92111

Filed Apr. 16, 1979, Ser. No. 30,090

Int. Cl.³ H01Q *7/02, 1/08*

U.S. Cl. 343—871 **2 Claims**

1. A foldable frame for supporting an electromagnetic radiation antenna which comprises:

a rigid boom;

at least one set of foldable arms;

means for pivotally connecting the first ends of the foldable arms around the boom in a circular pattern;

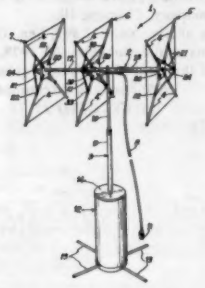
means for holding said set of foldable arms in a common angular position with the boom;

a mast having an extremity orthogonally attachable to the boom; and

base means for supporting said mast in an upright position, said base means comprising:

a rigid, portable, sealable enclosure which is shaped and dimensioned to form a hand-carrying sheath for housing all of the other components of said foldable frame, and means for mounting the mast above said enclosure, wherein said enclosure comprises:

a hollow cylinder closed at one end, having an inside length greater than the length of the longest of said components;



a removable lid having a hold in its center to receive the lower extremity of the mast, and a plurality of projections extending from the lower part of said cylinder.

4,249,186

PROCESSOR SYSTEM FOR DISPLAY AND/OR RECORDING OF INFORMATION

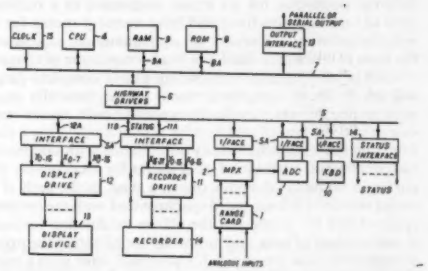
Roger D. Edwards, Solihull, England, assignor to Leeds & Northrup Limited, Birmingham, England

Filed Aug. 18, 1978, Ser. No. 934,814

Claims priority, application United Kingdom, Aug. 24, 1977, 35557/77

Int. Cl.³ G01D *9/00*

U.S. Cl. 346—35 **2 Claims**



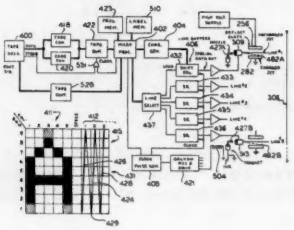
1. A digital processor system for providing a display representing a plurality of varying signals, said system comprising a clock source producing regular electrical signals, a control means coordinating a number of time-shared operations synchronized by signals derived from the clock signals, input circuitry for feeding the varying signals sequentially to the processor system in a first of the said operations and at a first rate determined by the control means, means for deriving digital signals representing the varying signals in a second of the said operations, means for processing the digital signals and placing them in a store in a third of the said operations, display means for providing a visual bar graph display with one bar for each varying signal, the display means comprising a plurality of display elements for each bar, and means for obtaining values from the store in a fourth of the said operations and transferring them to the display means at a second rate determined by the control means to control actuation of the display elements.

4,249,187

INK JET PRINTER WITH DEFLECTED NOZZLES

Rolf B. Erikson, Lincolnwood; Edward H. Zemke, Chicago, and Kenneth L. Guenther, Park Ridge, all of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Continuation of Ser. No. 722,899, Sep. 13, 1976, Pat. No. 4,122,457. This application Apr. 24, 1978, Ser. No. 899,409
The portion of the term of this patent subsequent to Oct. 24, 1995, has been disclaimed.
Int. Cl.[2] G01D *15/18*
U.S. Cl. 346—75 **5 Claims**



1. An electronic control circuit for an address printing office machine using an ink jet printer for repetitively printing a plurality of address labels, said control circuit comprising repertoire data storage means for bulk storing a preexisting plurality of complete sets of data, each of said sets of data representing the alphanumerical symbols required to print an address label, clock pulse generator means for supplying a stream of clock pulses, label memory means coordinated by said clock pulses for repeatedly reading out of said bulk storing means and storing in said label memory means blocks a predetermined number of said data sets without destruction of said stored data in said bulk storage means, whereby the same data may be repeatedly read out from said bulk storage means on different occasions, ink jet means responsive to a readout of each of said data sets from said label memory means for individually printing a plurality of alphanumerical characters in the form of an address label, the total compilation of characters of each of said labels corresponding to one complete data set, said ink jet means comprising means for mechanically oscillating a jet nozzle over a cyclically repetitive path, means responsive to said readout of said data for off/on modulating a stream from said ink jet simultaneously coordinated with said mechanical oscillations, automatic feeder means for successively transporting a plurality of media, one at a time, in the path of said ink jet stream at a fixed speed synchronized with the oscillation cycle of said jet nozzle and the off/on modulation responsive to said readout of data, and means for coordinating the printing of alphanumerical characters forming each label with a reading out of said sets of data and a passage of one of said media through said automatic feeder means.

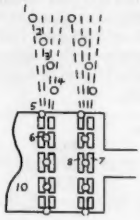
4,249,188

UNCHARGED INK DROP RASTERING, MONITORING, AND CONTROL

Ronald E. Graf, Oak Dr., Park View, Rte. 3, Box 520, Crozet, Va. 22932

Filed Feb. 27, 1979, Ser. No. 15,802
Int. Cl.[3] G01D *15/18*
U.S. Cl. 346—75 **4 Claims**

1. A droplet producing and detecting device comprising
a means to produce a series of droplets,
at least one monitor site contacted at respective times by at least some of said droplets,
an electrical circuit used to produce a voltage between areas of said site, which areas are, during a respective period corresponding to each droplet of said series of droplets which contacts said site, simultaneously opposed in position by different parts of the droplet, said areas being interior to and substantially locally parallel to portions of surface of said site, said portions being contacted simultaneously by said different parts of the droplet,
an electrical means which monitors the current in said electrical circuit, said current being affected by each droplet of said series of droplets which contacts said site at said portions of surface, said current being related to changes in induced electric charges at the interface between the site and the droplet.

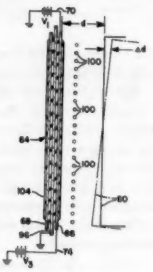


4,249,189

INK JET PRINTER HAVING IMPROVED DEFLECTION ELECTRODE

Clifford S. Fernalld, Jr., Xenia, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Sep. 4, 1979, Ser. No. 71,918
Int. Cl.[3] G01D *15/18*
U.S. Cl. 346—75 **12 Claims**



1. An ink jet printer for depositing drops from a plurality of jet drop streams on a print receiving medium, comprising:
print head means for generating a plurality of jet drop streams arranged in a row, each such stream directed at said print receiving medium,
means for selectively charging drops in said jet drop streams,
catcher means extending along said row of jet drop streams for catching drops deflected thereto, said catcher means being electrically conductive and maintained at a predetermined electrical potential,
deflection electrode means extending along said row of jet drop streams on the opposite side of said row from aid catcher means, said deflection electrode means comprising a strip of electrically resistive material, and
means for applying first and second electrical deflection potentials to the opposite ends of said strip of electrically resistive material, whereby a deflection field between said deflection electrode means and said catcher means is created with the strength of said field along said row of jet drop streams being substantially uniform by selecting said first and second electrical deflection potentials to compensate for variations in the distance between said catcher

means and said deflection electrode means along said row of jet drop streams.

4,249,190

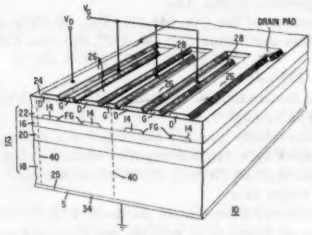
FLOATING GATE VERTICAL FET

Alfred Y. Cho, Summit, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 5, 1979, Ser. No. 54,822

Int. Cl.³ H01L *29/80*

U.S. Cl. 357—22 **7 Claims**



1. A field effect transistor (10) comprising

a body (12) of single crystal semiconductor material having a pair of major surfaces (24, 25),

a source electrode (34) formed on one major surface (25),

a drain elctrode (26) formed on the other major surface (24), and

gate electrode means (28) formed on one of said major surfaces (24) for causing a first depletion region (38) to form within said semiconductor body, the extent of said region being controllable by a voltage (V_G) applied to said gate electrode means,

said field effect transistor characterized by

a plurality of spaced-apart, metal electrodes (14) embedded within said body, each for providing an electrically floating potential, there between into which the depletion regions (36) of said so as to cause at least second and third depletion regions (36) to form within said body, thereby producing a source electrode-to-drain electrode current flow channel within said body between said second and third depletion regions,

the flow of current between said source and drain electrodes through said channel being controllable by said voltage (V_G) applied to said gate electrode means through the interaction of said first depletion region with said second and third depletion regions.

4,249,191

STRIPPED NITRIDE STRUCTURE AND PROCESS THEREFOR

Yukun Hsia, Santa Ana, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Apr. 21, 1978, Ser. No. 898,649

Int. Cl.³ H01L *27/02*

U.S. Cl. 357—41 **15 Claims**

1. A semiconductive device comprising:

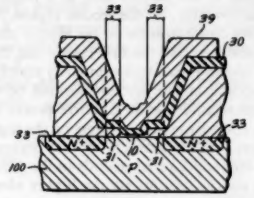
a. a substrate of a first conductive type,

b. a plurality of diffusion regions sharing a common surface boundary with said substrate,

c. a plurality of gate regions disposed between adjacent pairs of said diffusion regions,

d. a layer of first dielectric material over said substrate and a portion of said diffusion regions,

e. a layer of second dielectric material over only a preselected number of gate regions to form first transistors having nonvolatile memory capabilities, the non-selected gate regions forming second transistors having nonmemory capabilities, and



f. a plurality of contacts connected respectively to the gate and diffusion regions to permit selective operation of the first and second transistors.

4,249,192

MONOLITHIC INTEGRATED SEMICONDUCTOR DIODE ARRANGEMENT

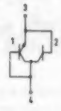
Egon Schulz, Emmendingen, and Ulrich Dolega, Freiburg, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

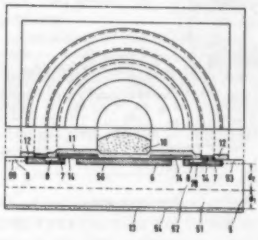
Filed Apr. 26, 1978, Ser. No. 899,914

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1977, 2718644

Int. Cl.³ H01L *29/00*

U.S. Cl. 357—38 **1 Claim**





1. A semiconductor diode arrangement, comprising:

a semiconductor wafer of the first conductivity type having first and second surfaces, including a layer of low ohmic substrate adjacent said second surface and a layer of higher ohmic substrate of the same conductivity type epitaxially grown on said layer of low ohmic substrate and adjacent the first surface;

a first region of the second conductivity type formed in the center of the first surface of the semiconductor wafer;

a second region of the second conductivity type formed in the first surface of the semiconductor body and surrounding the first region in spaced relation;

a third region of the first conductivity type formed in the second region;

a fourth region of the first conductivity type formed in the first surface of the semiconductor body and being partially embedded in the second region and spaced from the third region, said regions being formed and arranged so that the following relationship exists:

$$A_2 \cdot N_1 \cdot L_1 \approx A_1 \cdot N_2 \cdot L_2$$

wherein A_1 corresponds to the surface area of a junction formed between the first region and the semiconductor wafer, A_2 corresponds to the surface area of a junction formed between the third region and the second region, N_1 corresponds to the impurity concentration on the higher ohmic side of the junction formed between the first region and the semiconductor wafer, N_2 corresponds to the impurity concentration on the higher ohmic side of the junction formed between the third region and the second region, L_1 corresponds to the diffusion length of the minority charge carriers on the higher ohmic side of the junction formed between the first region and the semiconductor wafer and L_2 corresponds to the diffusion length of the minority charge carriers on the higher ohmic side of the junction formed between the third region and the second region;

a first metal coating connecting said first region and said third region;

a second metal coating connecting the second region and the fourth region;

first contact means disposed on said first metal coating; and

second contact means formed on said second surface of said semiconductor wafer.

4,249,193

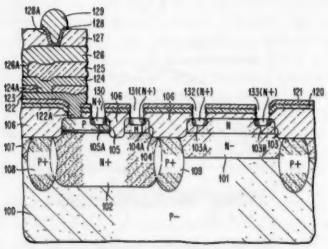
LSI SEMICONDUCTOR DEVICE AND FABRICATION THEREOF

John Balyoz, Hopewell Junction; Chi S. Chang, Wappingers Falls; Barry C. Fox, Poughkeepsie; John A. Palmieri, Wappingers Falls; Majid Ghafghaichi, Poughkeepsie; Teh-Sen Jen, Fishkill, and Donald B. Mooney, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 25, 1978, Ser. No. 909,605

Int. Cl.[3] H01L *27/02*

U.S. Cl. 357—40 **27 Claims**



1. In a planar semiconductor integrated circuit chip comprising:

a surface from which a plurality of regions of different conductivity types extend into the chip to provide transistors Schottky barrier diodes and resistors;

said transistors, Schottky barrier diodes and resistors being electrically isolated one from another and arranged in a generally orthogonal array of unit cells wherein each of said unit cells is electrically isolated from each of the remaining cells of said array;

said array of unit cells having 0 through m columns, where m is an integer number;

said array including unit cells of at least first, second, third and fourth types, each said first type unit cell includes a transistor, first and second resistors and at least four Schottky barrier diodes (FIG. **2C**), each said second type unit cell includes at least one Schottky barrier diode (FIG. **3**), each said third type unit cell includes at least five transistors and at least eight resistors (FIG. **4**), and each said fourth type cell includes at least two transistors, at least two Schottky Barrier diodes, and at least three resistors (FIG. **6**);

columns 1 through m − 1 of said 0 through m columns containing only cells of said first and second types;

column 0 containing at least one cell of said third type and a plurality of cells of said fourth type;

and column m containing exclusively a plurality of cells of said fourth type, whereby said surface of said semiconductor chip is essentially completely utilized to provide unit cells of said first, second, third and fourth types.

4,249,194

INTEGRATED CIRCUIT MOS CAPACITOR USING IMPLANTED REGION TO CHANGE THRESHOLD

Gerald D. Rogers, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 645,171, Dec. 29, 1975, abandoned. This application Aug. 29, 1977, Ser. No. 828,359

Int. Cl.[2] H01L *27/02, 29/78, 29/34*

U.S. Cl. 357—51 **7 Claims**

1. In a semiconductor integrated circuit, an MOS capacitor of the type having:

a. a silicon body having a major face and having a predominately P-type original impurity concentration;

b. a thin layer of thermal silicon oxide dielectric on a part of the major face;

c. a polycrystalline silicon conductive layer overlying said layer of dielectric to provide one plate of a capacitor and means for applying a positive voltage to said conductive layer;

d. a capacitor region in the surface of said major face underlying the layer of dielectric to provide the other plate of the capacitor;

e. and contact means including a heavily doped N+ region in the silicon body on said one face contiguous with an edge of the capacitor region and providing electrical connection thereo,

the improvement wherein: the capacitor region contains ion implanted conductivity-determining impurity material introduced into the silicon in addition to said original impurity concentration to substantially lower the threshold voltage at which said capacitor region inverts thereby causing the MOS capacitor to exhibit a high magnitude of capacitance at voltages applied to the conductive layer which are low compared to the threshold voltage of the device without such conductivity-determining impurity material introduced, the capacitor region being much thinner than the N+ region.

4,249,195

MESA-TYPE TRANSISTOR AND METHOD OF PRODUCING SAME

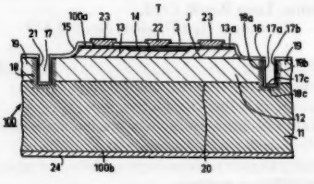
Bernard Roger, Carpiquet, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 16, 1978, Ser. No. 961,333

Claims priority, application France, Nov. 29, 1977, 77 35851

Int. Cl.[3] H01L *29/06*

U.S. Cl. 357—55 **17 Claims**



1. A semiconductor device being at least a bipolar transistor comprising a first semiconductor layer of a first conductivity type; a second semiconductor layer adjoining said first layer and being of a lower doping concentration of said first conductivity type, said first and second layers forming a collector

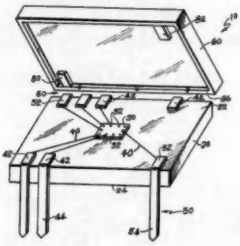
zone; a third semiconductor layer situated on said second layer and being of a second conductivity type, said third layer forming at least a portion of a base zone; an emitter zone of said first conductivity type formed in a surface of said third layer away from said second layer; and a recess including a first portion extending from said surface of said third layer through said third layer and at least along a major surface of said second layer for a predetermine distance to form a mesa-like base zone, and a second portion being a groove extending from said first portion at said second layer through said second layer into said first layer.

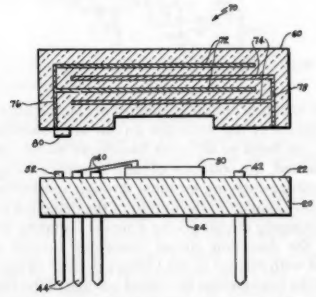
4,249,196

INTEGRATED CIRCUIT MODULE WITH INTEGRAL CAPACITOR

David J. Durney, Holland, Pa., and James A. Lockhart, Jr., Basking Ridge, N.J., assignors to Burroughs Corporation, Detroit, Mich.

Filed Aug. 21, 1978, Ser. No. 935,169
Int. Cl.[3] H01L 23/02, 23/12, 27/02
U.S. Cl. 357—74 4 Claims





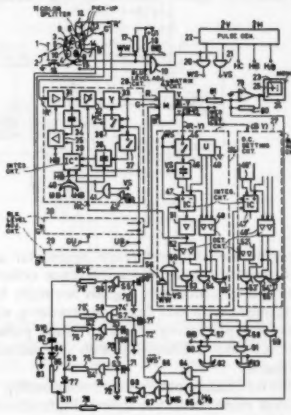
1. A semiconductor package comprising
an insulating substrate carrying an integrated circuit chip, the chip having a plurality of terminals,
a plurality of contacts secured to said substrate, each having a connection to one of said terminals,
a cover for said package, said cover including a bottom surface and a top surface, and
a capacitor embedded in said cover and comprising at least two spaced-apart conductors, each of which is connected to a contact pad on the bottom surface of said cover, each contact pad being positioned to make electrical contact with one of said contacts on said substrate when said cover is in place over said substrate.

4,249,197

METHOD AND DEVICE FOR ADJUSTING A TELEVISION CAMERA BY MEANS OF A MONITOR PICTURE, PRIOR TO SCENE RECORDING

Jacobus A. A. J. van Spaandonk, and Filippus L. Stok, both of Breda, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 6, 1979, Ser. No. 27,555
Claims priority, application Netherlands, Apr. 6, 1978, 7803660
Int. Cl.[3] H04N 9/62, 7/02
U.S. Cl. 358—10 12 Claims



1. A method for adjusting a television camera prior to scene recording using a monitor picture, said method comprising:
producing at least two spaced lines in said monitor picture during adjustments;
changing the composition of one of said lines indicating a camera adjustment to be performed in a first direction;
changing the composition of the other of said lines indicating a camera adjustment to be performed in a second direction; and
changing the composition of both of said lines indicating proper camera adjustment.

4,249,198

PHASE LOCKING SYSTEM FOR TELEVISION SIGNALS

Yutaka Ito; Masao Inaba; Mineo Mizukami, and Mikio Shimizu, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd. and Tokyo Broadcasting System Inc., both of Tokyo, Japan

Filed Mar. 8, 1979, Ser. No. 18,475
Claims priority, application Japan, Mar. 8, 1978, 53-26855
Int. Cl.[3] H04N 9/46, 5/76
U.S. Cl. 358—13 6 Claims

1. A phase locking system for a composite video signal having first synchronizing signals including horizontal and vertical synchronizing signals and a color subcarrier, said composite video signal having successive frames, each frame including two fields obtained by interlaced scanning, said frame being defined by said horizontal and vertical synchronizing signals, said first synchronizing signals having predetermined first phase relationships therebetween, said first phase relationships differing from one field to another for at least every two adjacent fields, said phase locking system comprising,
means for producing a first clock pulse train having a predetermined phase relationship with said first synchronizing signals,
means for encoding, in timed relationship with said first

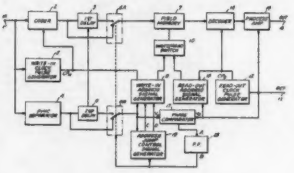
clock pulse train, said composite video signal into a digitized video signal,

memory means for storing said digitized video signal in response to said first clock pulse train, said memory means having a capacity for storing at least one-field portion of said digitized video signal,

means disposed between said encoding means and said memory means for delaying said digitized video signal for a predetermined period of time to produce a delayed digitized video signal,

means for selectively supplying said digitized video signal or said delayed digitized video signal to said memory means,

a reference signal source, having second synchronizing



signals including reference horizontal and vertical synchronizing signals and a reference color subcarrier, said second synchronizing signals normally being out of synchronism with said first synchronizing signals,

means for producing a second clock pulse train having a preset phase relationship with said second synchronizing signals,

means for reading out, in timed relationship with said second clock pulse train, the stored digitized video signal from said memory means, and

means for phase-comparing said first synchronizing signal with said reference synchronizing signal, said selectively supplying means being controlled by said phase-comparing means.

4,249,199

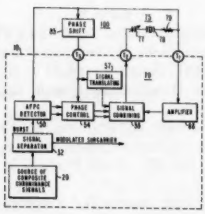
PHASE COMPENSATED CONTROLLED OSCILLATOR

Leopold A. Harwood, Bridgewater, and Erwin J. Wittmann, North Plainfield, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 9, 1979, Ser. No. 82,469

Int. Cl.[3] H04N 9/46; H03B 5/00

U.S. Cl. 358—19 **8 Claims**



1. In a controlled oscillator comprising: amplifier means including an active device having an output terminal, said output terminal having a parasitic capacitance associated therewith; filter means arranged in a feedback loop of said amplifier means for providing regenerative feedback of sufficient magnitude to produce an oscillatory signal at said output terminal of said active device; control means providing a control signal at an output terminal, said output terminal having a parasitic capacitance associated therewith; combining means for combining said oscillatory signal and said control signal to produce a combined signal at an output of said combining means, said combined signal being susceptible of an undesired phase shift attributable to said parasitic capacitances; and means for coupling output signals from said combining means to said filter; an arrangement comprising:

means for providing an auxiliary signal of predetermined magnitude and phase at the frequency of signals filtered by said filter means;

means for coupling said auxiliary signal to said combining means to form a resultant signal with said oscillatory signal and said control signal at an output of said combining means; and wherein

said predetermined magnitude and phase of said auxiliary signal is determined relative to the magnitude and phase of said combined signal such that said undesired phase shift is substantially cancelled in said resultant signal.

4,249,200

COLOR SELECTION CIRCUIT FOR COLOR TELEVISION

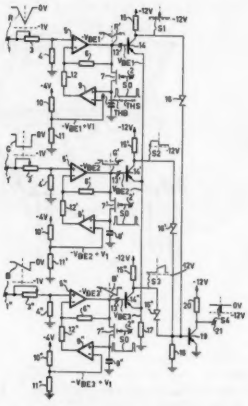
Anne H. Bruinsma, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 25, 1979, Ser. No. 52,034

Claims priority, application Netherlands, Jul. 7, 1978, 7807350

Int. Cl.[3] H04N 9/535

U.S. Cl. 358—22 **5 Claims**



2. A colour selection circuit as claimed in claim 1, characterized in that inputs of the detection circuit are connected respectively to the bases of different transistors whose emitters are interconnected, the collector of each transistor being connected to a voltage-carrying terminal through another resister and furthermore coupled to the output of the detection circuit, each signal clamping circuit giving a signal clamping level at the input of the detection circuit connected thereto which level is shifted with respect to the voltage present on the emitter by at least the base-emitter threshold voltage of the relevant transistor and with a polarity which blocks the transistors.

4,249,201

COLOR DECODER FOR COLOR TELEVISION RECEIVER

Peter Christiansen, and Gerhard Kohlbacher, both of Ulm, Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 24, 1979, Ser. No. 78,445

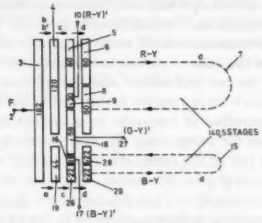
Claims priority, application Fed. Rep. of Germany, Sep. 23, 1978, 2841542; Aug. 3, 1979, 2931557

Int. Cl.[3] H04N 9/50, 9/535

U.S. Cl. 358—24 **16 Claims**

1. In a color decoder for a color television receiver, including demodulator means for demodulating a modulated chromi-

nance subcarrier to obtain color signals, delay lines in the form of a charge storage and transfer circuit for delaying the color signals by one picture line scanning period, and adder stages forming a matrix connected to produce color difference signals



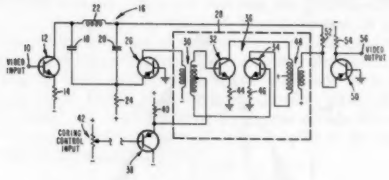
from the delayed and the undelayed color signals, the demodulator means and the adder stages being constituted by integrated circuits on a semiconductor chip, the improvement wherein said demodulator means and said adder stages comprise charge storage and transfer circuits.

4,249,202

CIRCUIT FOR FREQUENCY SELECTIVE CORING OF A VIDEO SIGNAL

Vinson R. Perry, San Carlos, and John O. Ryan, Cupertino, both of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed May 9, 1979, Ser. No. 37,345
Int. Cl.³ H04N 5/14
U.S. Cl. 358—36 **5 Claims**



1. A coring circuit for wideband video signals comprising the combination of;

low pass filter means for separating the wideband video signal into its low frequency and high frequency component signals, wherein the complimentary high frequency component signal appears at the return path of the low pass filter;

balanced amplifier means including a transformer coupled to the filter means high frequency component signal, whose degree of conduction increases with increasing video signal frequency to selectively remove a correspondingly increasing slice of noise therefrom; and

summing means coupled to the balanced amplifier means and to the filter means low frequency component signal to reconstitute the cored composite video signal.

4,249,203

SOLID STATE TELEVISION CAMERA

Seisuke Yamanaka, Mitaka, Japan, assignor to Sony Corporation, Tokyo, Japan

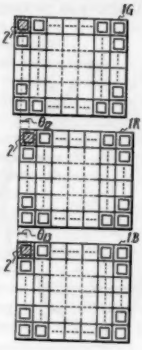
Filed Sep. 11, 1978, Ser. No. 941,313
Claims priority, application Japan, Sep. 14, 1977, 52/110878
Int. Cl.² H04N 9/09
U.S. Cl. 358—50 **7 Claims**

1. A solid state television camera having a plurality of image sensing chips comprising:

(a) optical means for projecting different colors of an image of an object on different image sensing chips which have predetermined lateral positions,

(b) read-out means for reading-out output signals from said image sensing chips with timings corresponding to said predetermined lateral positions of the projected object image on the image sensing chips,

(c) means for mixing said output signals from said image sensing chips so as to cancel the base-band components in said signals,



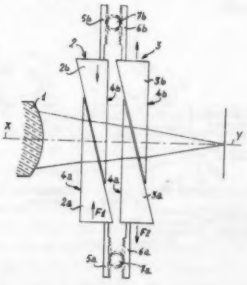
(d) means for deriving the side-band components included in said output signals of the image sensing chips from the output of said mixing means, and wherein said side-band component deriving means include frequency converting means to which is supplied a converting carrier having a frequency equal to a read-out clock fed to said read-out means.

4,249,204

DEVICE AND METHOD FOR ADJUSTING THE VALUE OF CHROMATISM ABERRATIONS IN AN OPTICAL SYSTEM, NOTABLY FOR TV CAMERAS

Andre Masson, Saint-Heand, France, assignor to Etablissements Pierre Angenieux, Saint-Heand, France

Filed Apr. 20, 1979, Ser. No. 31,866
Claims priority, application Luxembourg, May 5, 1978, 79603
Int. Cl.³ H04N 9/04
U.S. Cl. 358—55 **4 Claims**



1. A device for adjusting the value of the chromatism aberrations of an optical system, which comprises an assembly consisting of at least four prismatic blades forming two optically parallel groups having a variable thickness and comprising two blades each, said blades being made from transparent materials having the same index of refraction and the same index of dispersion for the blades of a same group, but a different index of dispersion for each group, and control means for varying the

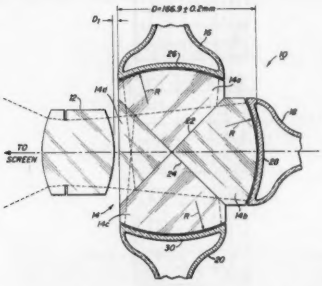
thickness of each group of blades while preserving a constant total thickness.

4,249,205

ASPHERIC PROJECTION LENS SYSTEM UTILIZING CONCAVE IMAGE

Richard A. Buchroeder, Tucson, Ariz., assignor to Marvin P. Hodges, St. Petersburg, Fla.

Filed Dec. 11, 1978, Ser. No. 968,424
Int. Cl.³ H04N *9/31, 5/74;* G02B *3/04*
U.S. Cl. 358—60 **17 Claims**



1. A lens system usable for projecting an image disposed on a concave surface having a predetermined radius of curvature onto a screen, comprising:

a prism having a flat surface and a convex surface having a predetermined radius of curvature substantially similar to the radius of curvature of the concave image surface, said convex surface being disposed adjacent to said concave image surface; and

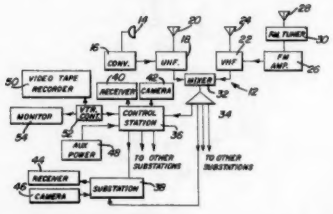
a single element objective lens having at least one aspheric surface, said objective lens being disposed adjacent to said flat surface of said prism and spaced therefrom.

4,249,206

AUDIO AND VISUAL INTERCOMMUNICATION AND SURVEILLANCE SYSTEM

Thomas T. Roscoe, 1516 E. Las Olas Blvd., Ft. Lauderdale, Fla. 33301

Filed Apr. 14, 1977, Ser. No. 787,374
Int. Cl.³ H04N *7/16, 7/18*
U.S. Cl. 358—86 **10 Claims**



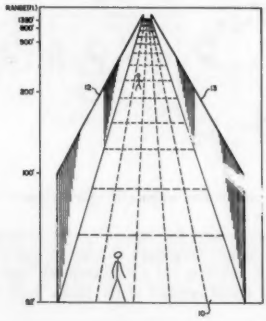
1. In combination with an antenna distribution system connected to a plurality of standard receivers having input and output components interconnected by interstage switch means, a control station located adjacent one of said standard receivers, a system interconnecting said control station with the other standard receivers at a plurality of remote stations comprising transducer means at each of said control and remote stations, mode control means at the control station connected to the interstage switch means for disconnecting the input and output components from each other in said one of the receivers and in selected ones of the other receivers, station selection means at the control station connected to the interstage switch means for rendering the interstate switch means associated with said selected ones of the other of the receivers effective to disconnect the components thereof from each other, communication circuit means operative in response to actuation of the station selection means for interconnecting the disconnected output components at selected remote stations with the transducer means at the control station to establish intercommunication between the control station and the selected remote stations, surveillance circuit means connected to the station selection means operative in response to actuation of the station selection means for connecting the disconnected output component of said one of the receivers at the control station to the transducer means at selected remote stations at which the input and output components are not disconnected, signalling means at each of the remote stations connected to the station selection means for transmitting an alerting signal to the control station identifying the remote station from which the signal originates, and message control means at the control station connected to the transducer means for controlling two-way transmission of intelligence signals between said control station and the selected remote stations when said intercommunication is established.

4,249,207

PERIMETER SURVEILLANCE SYSTEM

R. Keith Harman, Kanata, and John W. Patchell, Nepean, both of Canada, assignors to Computing Devices Company, Ottawa, Canada

Filed Nov. 26, 1979, Ser. No. 97,551
Claims priority, application Canada, Feb. 20, 1979, 321857
Int. Cl.³ H04N *7/18*
U.S. Cl. 358—108 **16 Claims**



1. An automatic video intrusion detection system to detect targets comprising intruders moving more than a predetermined distance in a direction from one side to the other of an area to be monitored, said system comprising a television camera disposed to view a predetermined area which includes said area to be monitored, said television camera supplying a video image of said predetermined area to a preprocessor, said preprocessor having means for dividing into a predetermined number of cells a portion of said video image substantially corresponding to said area to be monitored, means for deriving integrated video intensity values for said cells and means for storing said integrated intensity values in an output buffer, said system further comprising computer means for periodically analyzing the values stored in said buffer to detect changes in said values exceeding a predetermined amount and to track changes in values for consecutive cells indicating movement of a target, said computer activating an alarm if changes in more than a predetermined number of adjacent cells are tracked in said direction.

4,249,208

GAMMA CORRECTION CIRCUIT FOR A VIDEO SIGNAL AND TELEVISION CAMERA SUITABLE THEREFOR

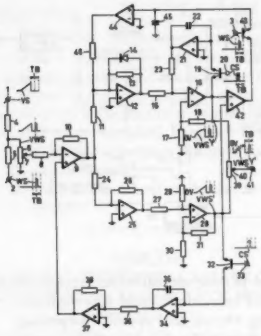
Henricus W. G. Haenen; Gerardus J. M. Hesselmann, and Howard C. Needs, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 18, 1979, Ser. No. 58,579

Claims priority, application Netherlands, Aug. 21, 1978, 7808609

Int. Cl.[3] H04N 5/20

U.S. Cl. 358—164 5 Claims



1. A gamma correction circuit for a video signal comprising a linear and a non-linear amplifier circuit and at least a black level clamping circuit, the linear and non-linear amplifier outputs being connected to inputs of a signal combining circuit which includes an output for carrying the gamma-corrected signal, characterized in that said gamma correction circuit further comprises a signal comparison circuit coupled to the outputs of the linear and non-linear amplifier circuits for comparing, in line blanking periods, the amplitude of a pulse-shaped signal, having been added to said video signal, present in the linear and non-linear amplifier output signals, the output of the signal comparison circuit being coupled to the input of the non-linear amplifier circuit.

4,249,209

VIDEO NOISE REDUCTION SYSTEM

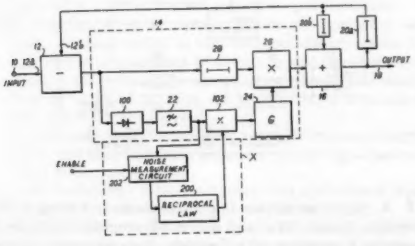
Richard Storey, Sutton, England, assignor to British Broadcasting Corporation, London, England

Filed Mar. 26, 1979, Ser. No. 23,592

Claims priority, application United Kingdom, Apr. 3, 1978, 12972/78

Int. Cl.[3] H04N 5/21

U.S. Cl. 358—167 4 Claims



1. Apparatus for reducing the effect of noise in an electrical signal which is obtained by scanning, said apparatus comprising:

input and output terminals;

a delay device coupled to the output terminal for providing a delay time of substantially one scan; and

means coupled to the input terminal and to the output of the delay device for attenuating differences between the input signal during the current scan and the output signal during a preceding scan to provide an output signal which is applied to the output terminal;

said means including a subtractor coupled to the input terminal and to the output of the delay device for providing a difference signal, and an attenuation circuit operative to provide a varying degree of attenuation in dependence upon said difference signal;

the attenuation circuit comprising:

variable-gain means coupled to the output of the subtractor;

non-linear transfer characteristic means coupled to the output of the variable-gain means; and

multiplier means coupled to the output of the non-linear transfer characteristic means; and

an adder coupled between the output of the multiplier means and the output terminal;

and wherein the apparatus further comprises:

noise-measurement means responsive to a signal in the apparatus automatically to vary the value of the gain of the variable-gain means;

said noise-measurement means being coupled to receive a signal representing the difference between the current scan and the output signal during a preceding scan.

4,249,210

VIDEO NOISE REDUCTION SYSTEM

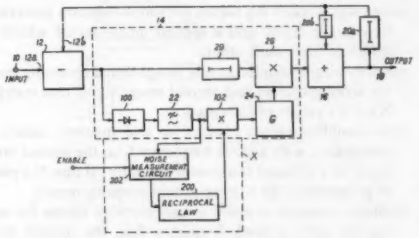
Richard Storey, Sutton, and John O. Drewery, Coulsdon, both of England, assignors to British Broadcasting Corporation, London, England

Filed Mar. 26, 1979, Ser. No. 23,593

Claims priority, application United Kingdom, May 24, 1978, 12972/78

Int. Cl.[3] H04N 5/21

U.S. Cl. 358—167 7 Claims



1. Apparatus for reducing the effect of noise in an electrical signal which is obtained by scanning, said apparatus comprising:

input and output terminals;

a delay device coupled to the output terminal for providing a delay time of substantially one scan; and

means coupled to the input terminal and to the output of the delay device for attenuating differences between the input signal during the current scan and the output signal during a preceding scan to provide an output signal which is applied to the output terminal;

said means including a subtractor coupled to the input terminal and to the output of the delay device for providing a difference signal, and an attenuation circuit operative to provide a varying degree of attenuation in dependence upon said difference signal;

the attenuation circuit comprising:

variable-gain means coupled to the output of the subtractor;

non-linear transfer characteristic means coupled to the output of the variable-gain means; and

multiplier means coupled to the output of the non-linear transfer characteristic means; and

an adder coupled between the output of the multiplier means and the output terminal;

and wherein the apparatus further comprises:

a plurality of separate controls for automatically varying the gain of the variable-gain means, and means for selectively using one of the controls in dependence upon the magnitude of the input signal to the apparatus.

4,249,211

COMPOSITE IMAGE DISPLAY APPARATUS

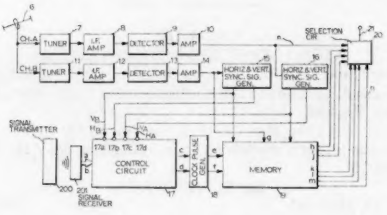
Takaaki Baba, Nishinomiya; Teruo Kitani, Takatsuki; Masao Nakazawa, Nagaokakyo; Hirokazu Yoshino, Katano; Tatsuo Fujita, Moriguchi, and Eiichi Tsuboka, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Feb. 5, 1979, Ser. No. 9,731

Claims priority, application Japan, Feb. 7, 1978, 53-13232

Int. Cl.³ H04N 5/22

U.S. Cl. 358—183 **5 Claims**



1. An image display apparatus comprising:

image signal receiving means for simultaneously receiving a first image signal and a second image signal which are different from each other;

memory means coupled to said image signal receiving means for writing therein said second image signal into matrixed $N_H \times N_V$ pieces of information;

write-sampling means coupled to said memory means for converting, with a clock frequency f_{CW}, the second image signal in a selected horizontal line interval into N_H pieces of information for storing in said memory means;

reading-out means coupled to said memory means for reading-out, with a clock frequency f_{CR}, the second image signal stored in the memory means by said write-sampling means;

write-sequence control means coupled to said write-sampling means for repeating the operation conducted by said write-sampling means with a period of n_W·H, where H is the horizontal line interval, and $f_{CR} = n_W \cdot f_{CW}$;

read-out-sequence control means coupled to said reading-out means for repeating the operation conducted by said reading-out means with a period of H;

display means coupled to said reading-out means for displaying full picture information or partial picture information of said second image signal in a portion of the displayed picture of said first image signal by selecting the integral number n_W, the writing clock frequency f_{CW} and the reading-out clock frequency f_{CR}, whereby said second image signal is able to be zoomed;

and display position control means for varying the write start timing of said memory means for displaying a full or partial picture of said second image signal at the portion of the displayed picture of the first image signal.

4,249,212

TELEVISION PICTURE SPECIAL EFFECTS SYSTEM USING DIGITAL MEMORY TECHNIQUES

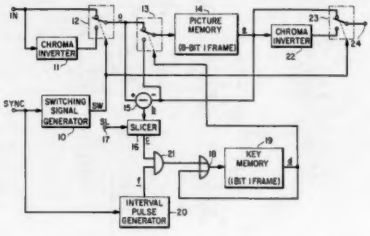
Yutaka Ito; Yukihiko Isomura; Katsuhisa Kato; Hiroshi Takahashi, and Masao Inaba, all of Tokyo, Japan, assignors to Tokyo Broadcasting System Inc. and Nippon Electric Co., Ltd., both of Tokyo, Japan

Filed May 16, 1979, Ser. No. 39,320

Claims priority, application Japan, May 19, 1978, 53-60227

Int. Cl.³ H04N 5/22

U.S. Cl. 358—183 **6 Claims**



1. A television picture special effects system for a television video signal, said television signal representing a picture including a moving object, said system comprising:

means for storing said television video signal for a period equal to at least one field of said television signal;

means for developing a position information signal representative of the position of said moving object in said picture; and

means operatively connected to said storing means and said signal-developing means for inhibiting the write-in of said television video signal into said storing means and for allowing the previously stored television video signal to pass to said storing means in response to said position information signal.

4,249,213

PICTURE-IN-PICTURE TELEVISION RECEIVER

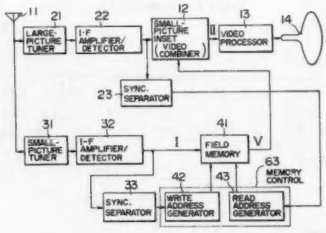
Takuya Imaide; Tomomitsu Kuroyanagi, and Michio Masuda, all of Yokohama, Japan, assignors to Hitachi, Ltd., Japan

Filed Sep. 11, 1979, Ser. No. 74,761

Claims priority, application Japan, Sep. 14, 1978, 53/113316; May 11, 1979, 54/57106; Jul. 30, 1979, 54/96144

Int. Cl.³ H04N 5/22

U.S. Cl. 358—183 **11 Claims**



1. A picture-in-picture television receiver having a first-television picture tuner and a first I-F amplifier/detector for receiving a program of a first television picture, a second-television picture tuner and a second I-F amplifier/detector for receiving another program of a second television picture, a common video signal coupling means, a video signal processing means and a display means, and in which the second televi-

sion picture is compressed at a reduction rate of 1/n (n: positive integers) and inset as a small picture in part of the first television picture, said picture-in-picture television receiver comprising:

(a) a single field memory means coupled between said second I-F amplifier/detector and said common video signal coupling means and capable of randomly reading and writing a video signal of the second television picture each horizontal scanning period as a unit, and

(b) memory control means responsive to sychronizing signals of said first and second television pictures for generating a first clock signal and a second clock signal whose frequency is n times the frequency of said first clock signal, said first clock signal being supplied to said field memory for writing therein contents of said small picture each horizontal scanning period, said second clock signal being supplied to said field memory for reading out the contents stored in the field memory each horizontal scanning period in no write condition to render the contents of small picture to be supplied to said coupling means for coupling the second television picture signal with the first television picture signal;

whereby the second television picture can be inset in the first television picture.

4,249,214

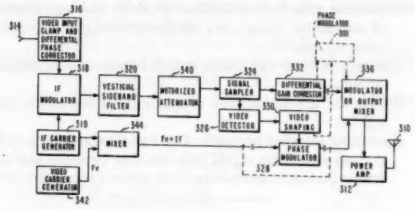
EXCITER HAVING INCIDENTAL PHASE CORRECTION COMPENSATION IN CONSONANCE WITH OUTPUT POWER LEVEL

William M. Boyd, Washington, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 23, 1979, Ser. No. 23,392

Int. Cl.[3] H04N *5/40*; H04B *1/04*

U.S. Cl. 358—186 **6 Claims**



1. An improved arrangement for generating incidental-phase modulation corrected modulated carrier signals at a predetermined frequency, comprising:

a source of information signals;

first modulator means coupled to said source of information signals for modulating said information signals onto an intermediate-frequency carrier to form a modulated IF carrier;

signal amplitude dividing means including an input terminal, and also including first and second output terminals;

first coupling means for coupling said input terminal of said signal dividing means to said first modulation means for applying said modulated IF carrier to said signal dividing means input terminal for directing portions of said modulated IF carrier to said first and second output terminals of said signal dividing means

amplitude detection means coupled to said first output terminal of said signal dividing means for producing a reconstituted information signal;

second modulation means including first and second input terminals and also including an output terminal;

a source of second carrier signals at a frequency related to said intermediate frequency and to said predetermined frequency;

second coupling means for coupling said first and second input terminals of said second modulation means to said source of second carrier signals and to said second output terminal of said signal division means, respectively, for translating said modulated IF carrier signals by said frequency of said second carrier signals thereby producing modulated carrier signals at said predetermined frequency at said output terminal of said second modulation means, said second coupling means further comprising controllable phase modulation means including a control input terminal coupled to said amplitude detection means and also including a controlled signal path for correcting incidental phase modulation in response to said reconstituted signal;

wherein the improvement lies in that said controlled signal path of said phase modulation means is coupled between said source of second carrier signals and said first input terminal of said second modulation means for phase-correcting said second carrier signal and thereby correcting said modulated carrier signals at said predetermined frequency for incidental phase distortion.

4,249,215

TELEVISON CAMERA COMPRISING A PICK-UP TUBE

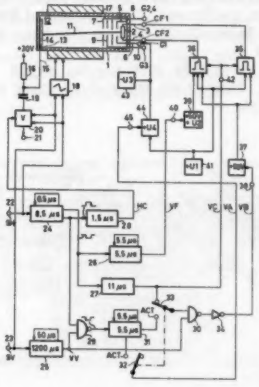
Erich E. Himmelbauer, and Willem J. Lohuis, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 4, 1979, Ser. No. 45,553

Claims priority, application Netherlands, Jun. 30, 1978, 7807072

Int. Cl.[3] H04N *5/34*

U.S. Cl. 358—217 **11 Claims**

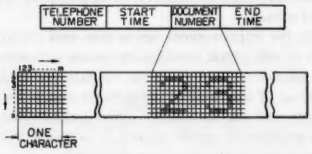


1. A television camera comprising a pick-up tube having a directly heated cathode for emitting, while being heated, an electron beam, a control electrode for the electron beam, deflection means and a target plate which is scanned line-by-line and field-by-field with periodical scanning and blanking periods by the electron beam under the control of the deflection means, said directly heated cathode having a cathode filament, and a heater voltage source connected to said cathode filament, the heater voltage source being a pulse voltage source, wherein the pulse heater voltage produced thereby is present in at least a portion of the line blanking periods and absent in the line scanning periods.

4,249,216
FACSIMILE TRANSCEIVER APPARATUS

Hajime Kanda, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Aug. 14, 1979, Ser. No. 66,601
Claims priority, application Japan, Sep. 4, 1978, 53-107576
Int. Cl.[3] H04N *1/32*
U.S. Cl. 358—257 10 Claims



1. A facsimile apparatus including a scanner for scanning an original document and producing data signals representing the document and a printer for reproducing an original document in response to received data signals, characterized by comprising:

code generator means for producing identification code signals;

memory means for storing the code signals;

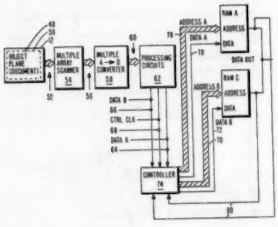
character generator means for converting the code signals into data signals for reproduction by the printer; and

control means for causing the code signals to be read out of the memory means and fed through the character generator means to the printer for printing.

4,249,217
SEPARATED SENSOR ARRAY ABUTMENT

Eugene C. Korte, and Karen C. Rayburn, both of Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 29, 1979, Ser. No. 43,208
Int. Cl.[3] H04N *1/02;* H01J *40/14;* G06K *9/00*
U.S. Cl. 358—294 14 Claims



1. In a scanner having a plurality of arrays with each array having a plurality of photosensitive elements, apparatus for electronically abuting an electronic image generated by the scanner; said apparatus comprising in combination:

means for projecting a test pattern onto the arrays;

means for generating an electronic image of the test pattern;

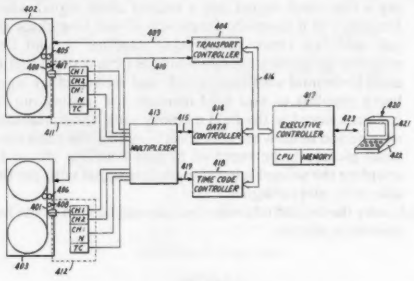
memory means for storing the electronic image; and

controller means associated with the memory means, said controller means being operable to assign predetermined memory address whereat the electronic images are being stored and operable to adjust the predetermined memory addresses thereby allowing abutment of the electronic images.

4,249,218
METHOD AND APPARATUS FOR EDITING DIGITALLY RECORDED AUDIO SIGNALS

Donald E. Davis, Los Angeles, Calif., and Robert J. Youngquist, White Bear Lake, Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation of Ser. No. 956,580, Nov. 1, 1978. This application Sep. 4, 1979, Ser. No. 72,076
Int. Cl.[3] G11B *27/02*
U.S. Cl. 360—13 4 Claims



1. A method of editing and combining selected portions of digitally recorded audio signals located on separate channels on record medium to form a composite audio signal comprising the steps of

designating tentative entry and exit edit point words defining selected portions of said audio signals,

storing the spatial location of said tentative edit point words,

storing a multiplicity of audio signal data words proximate to said tentative edit point words,

displaying information indicative of the average amplitude of said audio signal data proximate to said tentative edit point words,

selecting refined edit point words based on said displayed information,

storing the spatial location of said refined edit point words, and

combining selected portions of said audio signal data to form a composite audio signal by switching between said channels at positions defined by said refined edit point words.

4,249,219
CURRENT DRIVE CIRCUIT FOR AN INDUCTION COIL

Hajime Aoi, Chofu; Takashi Tamura, Kokubunji; Makoto Koizumi, Hachioji; Noboru Kunimi, Sayama; Minoru Enomoto, Kodaira, and Noriaki Hatanaka, Odawara, all of Japan, assignors to Hitachi, Ltd., Japan

Filed May 24, 1979, Ser. No. 42,590
Claims priority, application Japan, May 24, 1978, 53/61056
Int. Cl.[3] G11B *5/09*
U.S. Cl. 360—46 15 Claims

1. A current drive circuit for an induction coil comprising:

current source means connected to said induction coil for providing a current thereto through first and second terminals of said induction coil on a selective basis;

bias voltage source means coupled to the induction coil for providing a bias voltage thereto;

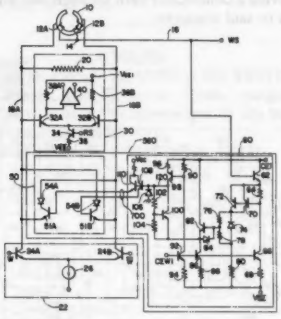
means connected to said first and second terminals of said induction coil for responding to voltages of said first and second terminals;

reference voltage means for providing a reference voltage;

first switching means having a control electrode thereof connected to said reference voltage means, and an output electrode thereof being connected to said first terminal of said induction coil, wherein said first switching means conducts to supply said first terminal of said induction coil with a clamp voltage depending on said reference voltage when the difference between voltages of said control and

output electrodes of said first switching means reaches a predetermined value; and

second switching means having a control electrode thereof being connected to said reference voltage means, and an output electrode thereof being connected to said second



terminal of said induction coil, wherein said second switching means conducts to supply said second terminal of said induction coil with said clamp voltage when the difference between voltages of said control and output electrodes of said second switching means reaches said predetermined voltage.

4,249,220

CAPSTAN SERVO SYSTEM IN A RECORDING AND/OR REPRODUCING APPARATUS

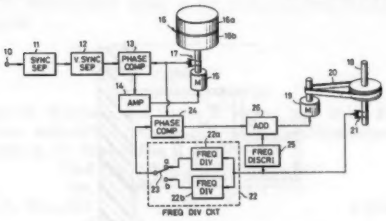
Katsuya Yasutake, Yokohama, and Akiyoshi Morita, Sagamihara, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Nov. 7, 1978, Ser. No. 958,407

Claims priority, application Japan, Nov. 11, 1977, 52-135322

Int. Cl.[3] G11B *15/52*

U.S. Cl. 360—73 **2 Claims**



1. A capstan servo system in a recording and/or reproducing apparatus comprising:

means for detecting the rotation of a capstan for driving a tape;

means for dividing the frequency of the output signal of said detection means;

means for obtaining a reference signal having a frequency equal to the frame frequency of the system of the video signal to be recorded on and/or reproduced from said tape;

means for comparing the phase of said frequency divided signal with the phase of said reference signal;

means for frequency discriminating said output signal of said detection means; and

means for adding the error signal output of said phase comparison means and the signal output of said frequency discrimination means to obtain a sum signal for controlling the rotation of a motor for driving said capstan,

said frequency dividing means enabling a selection of its frequency division ratio to perform a division of the frequency of said output signal of said detector means in accordance with the selected ratio, whereby the frequency of said output signal of said detector means is invariably divided into a frequency equal to the frequency of a reference signal regardless of changes in the frequency of the reference signal caused by differences in the frame frequencies of the video signals of different systems,

said video signal systems being the NTSC system having a frame frequency of 30 Hz and the CCIR system having a frame frequency of 25 Hz,

said detection means producing an output signal having a frequency of 150 M Hz (where M is a positive integer), and said frequency division means enabling a frequency division ratio to be selected from between 1/5M and 1/6M,

said rotation detecting means producing a stream of output pulses, said frequency dividing means comprising:

a binary-coded thirty-two scale counter for counting the pulses in the output signal of said detector means and for generating a high-level or a low-level output at five, or at the first through fifth output terminals thereof, responsive to said counting;

two inverters connected to the second and third output terminals of said counter;

a five-input NAND gate having five input terminals respectively connected to the first, fourth, and fifth output terminals of said counter and to said inverters;

a four-input NAND gate having four input terminals respectively connected to the second through the fifth output terminals of said counter; and

means for selectively leading out the output of said five-input NAND gate or said four-input NAND gate depending on whether the frame frequency of the video signals is 30 Hz or 25 Hz.

4,249,221

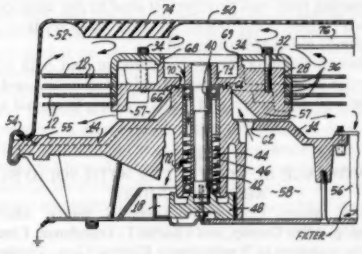
METHOD AND APPARATUS FOR PREVENTING CONTAMINATION OF A ROTATING MAGNETIC DISC

Robert M. Cox, Northridge; Dan L. Kilmer, Sepulveda, and Adam Kolkowski, Thousand Oaks, all of Calif., assignors to SLI Industries, Inc., Woodland Hills, Calif.

Filed Apr. 23, 1979, Ser. No. 32,127

Int. Cl.[3] G11B *17/02*

U.S. Cl. 360—97 **7 Claims**



1. In a mechanism for rotary driving of a magnetic disc, said mechanism including a base plate, a central bearing chamber in said base plate having at least one bearing mounting a hub for rotation about an axis, a magnetic disc supported on said hub and secured thereto by a clamp, and a cover which overlies said disc and cooperates with said base plate to form an enclosed compartment within which said disc rotates, one end of said bearing chamber forming an interface between said bearing chamber and said enclosed compartment;

an apparatus for preventing contamination of said disc by particles outgassed from said bearing chamber, said apparatus comprising:

means for maintaining an elevated pressure in said compartment;

an aperture through a portion of said hub overlying said interface for placing said elevated pressure in communication with said interface; and

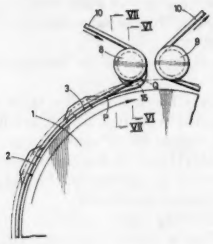
means for placing said bearing chamber in communication with atmospheric pressure outside of said enclosed compartment.

4,249,222

RECORDING AND/OR REPRODUCING APPARATUS FOR REDUCING TAPE VIBRATION

Koichi Iwasaki, Chigasaki, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 27, 1979, Ser. No. 15,718
Claims priority, application Japan, Mar. 6, 1978, 53-26380
Int. Cl.[3] G11B *15/60*
U.S. Cl. 360—130.23 **30 Claims**



1. In a recording and/or reproducing apparatus having a tape wrapped about the periphery of a head disc having at least two heads of a width smaller than the width of said tape and which are mounted at said periphery and projecting therefrom for the purpose of recording signals on said tape and/or reproducing signals from said tape by rotating said heads with said head disc while the tape is longitudinally moved so that said heads scan obliquely across the surface of said tape, the improvement comprising:

main tape guiding means contacting the tape across the entire width of the tape and being spaced from said periphery of the head disc for guiding the tape in a path departing from said periphery at least by the distance said heads project therefrom so that said heads separate from said tape along said path; and

vibration preventing means contacted at said path with a portion of the width of said tape for preventing said tape from vibrating when said heads separate from said tape.

4,249,223

HIGH VOLTAGE DC CONTACTOR WITH SOLID STATE ARC QUENCHING

Kenneth C. Shuey, Cridersville; Donal E. Baker, American Township, Allen County, and Charles L. Doughman, Lima, all of Ohio, assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 1, 1978, Ser. No. 965,558
Int. Cl.[3] H01H *9/30*
U.S. Cl. 361—4 **5 Claims**

1. A high voltage DC contactor with solid state arc quenching comprising:

a pair of contacts;

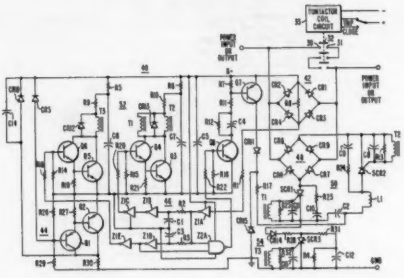
a movable armature for selectively connecting said contacts together;

first rectifier means connected across said contacts for providing a rectified signal indicating initiation of arcing upon opening of said contacts;

second rectifier means connected across said contacts for commutating unidirectional voltage into and out of said contacts;

time delay circuit means responsive to said signal from said first rectifier means to provide a time delayed signal;

static switching means responsive to said time delayed signal to provide a conductive path through said second rectifier means to said contacts;



a commutation capacitor connected to discharge across said contacts when said static switching means provides said conductive path, said second rectifier means applying stored energy from said capacitor in opposition to the arc initiating voltage at said contacts to extinguish the arc;

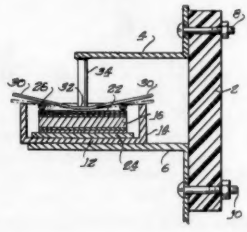
means for readying said commutation capacitor for further operation by charging up said capacitor following a predetermined time delay after its discharge.

4,249,224

SURGE VOLTAGE ARRESTER WITH FAIL-SAFE FEATURE

Bertram W. Baumbach, Arlington Heights, Ill., assignor to Reliable Electric Company, Franklin Park, Ill.

Filed Mar. 7, 1979, Ser. No. 18,337
Int. Cl.[3] H02H *3/22, 9/04*
U.S. Cl. 361—124 **8 Claims**



1. A surge voltage arrester for a communications line comprising a line terminal adapted for connection to a line to be protected, a ground terminal, means forming a first electrical circuit between said terminals that is substantially non-conductive for line voltages below a predetermined value but becomes substantially conductive to arrest surge voltages on the line above said predetermined value, said first circuit including circuit component means having a resistance that decreases as increasing voltage is applied thereacross and which heats excessively in an overcurrent condition in the protected line, said component means being further characterized as passing increased current for a given voltage upon increased temperature, a normally-open second electrical circuit coupled between said terminals and including a pair of contactors electrically connected respectively to said terminals, means applying pressure tending to bring said contactors into engagement, and

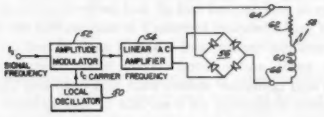
heat-deformable means operable in opposition to said pressure-applying means to maintain said contactors apart, said heat-deformable means deforming sufficiently upon heating of said component means to cause said contactors to engage so that said second circuit closes and provides a direct conductive path between said terminals.

4,249,225

MAGNETIC FIELD TRANSDUCER SYSTEMS

Theodore J. Mapes, Old Saybrook, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 29, 1979, Ser. No. 42,824
Int. Cl.³ H01H *47/32*
U.S. Cl. 361—152 **3 Claims**



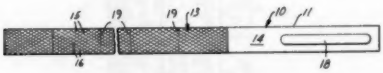
1. A magnetic field transducer system comprising:
a local oscillator for providing a carrier frequency signal;
amplitude modulation means connected to said local oscillator to receive the carrier frequency signal and adapted to receive a control signal, said amplitude modulation means providing an amplitude modulated signal;
a demodulator connected to said amplitude modulation means for receiving the amplitude modulated signal, said demodulator providing a demodulated signal at a predetermined D.C. bias level; and
a transducer connected to said demodulator for receiving the demodulated signal at the predetermined D.C. bias level.

4,249,226

GROUNDING STRAP

Walter M. Westberg, and Daniel J. Newes, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 22, 1979, Ser. No. 13,813
Int. Cl.³ H01B *7/08*; A61N *1/14*
U.S. Cl. 361—223 **4 Claims**



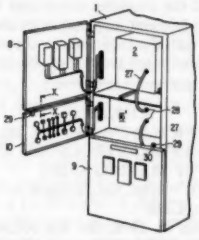
1. A grounding strap adhesively attached to a shoe comprising:
(a) a flexible conductive backing,
(b) a pressure-sensitive adhesive coating on one surface of the backing extending from one end of the backing but terminating short of the opposite end so that the backing extends beyond the adhesive,
(c) an open mesh scrim, the scrim forming a series of interstices, one surface of the scrim secured to the adhesive and the opposite surface extending above the plane of the surface of the adhesive forming a shield to provide a tack-free surface over the adhesive and upon pressure applied to said backing, the backing indents forcing the adhesive through the interstices for adhesive contact to a surface of said shoe,
(d) flexible metallic means secured to the backing at the end of the backing extending beyond the adhesive for fastening one end of the strap to the upper edge of a shoe, and
(e) rows of perforations transversely disposed at longitudinally spaced intervals along the adhesive coated surface of the backing, the perforations extending through the backing and adhesive for removing segments of the strap to correlate the strap length to the dimensions of a shoe.

4,249,227

ENCLOSED SWITCHBOARD HAVING INSTRUMENTS NEEDED FOR REGULAR INSPECTION AND OPERATION MOUNTED ON A MIDDLE LEVEL DOOR

Yasuhiro Kato, Hachioji; Nobuo Sekiguchi, Tokorozawa, and Sizuo Yosida, Fuchu, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Continuation of Ser. No. 857,976, Dec. 6, 1977, abandoned. This application Mar. 15, 1979, Ser. No. 20,738
Claims priority, application Japan, Dec. 14, 1976, 51-166737
Int. Cl.³ H02B *1/04*
U.S. Cl. 361—334 **9 Claims**



1. An enclosed switchboard, comprising:
a switchboard frame having formed therein an upper apparatus accommodating chamber and a lower apparatus accommodating chamber, said chambers containing electrical apparatus,
a top level door and a bottom level door mounted at the free surfaces of said frame facing the two chambers so as to be capable of being opened and closed separately from one another, said top and bottom level doors having mounted thereon first instruments which are restricted to instruments that do not indicate the operating state of the accommodating electrical apparatus; and
a middle level door provided between said top level door and bottom level door and having mounting holes provided in its door surface, second instruments restricted to the type needed for regular inspection and operation being mounted in said mounting holes and catches causing the middle level door to follow the opening movement of either the upper level door or the lower level door.

4,249,228

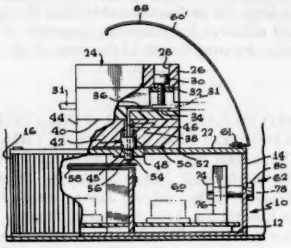
HOUSING FOR AN ELECTRICAL CIRCUIT

Leonard Moore, Northridge, and Jerry A. Durr, Newbury Park, both of Calif., assignors to Moore Industries Inc., Sepulveda, Calif.

Continuation-in-part of Ser. No. 891,622, Mar. 30, 1978, abandoned. This application Apr. 30, 1979, Ser. No. 34,573
Int. Cl.³ H05K *7/20*
U.S. Cl. 361—388 **15 Claims**

1. A housing for an electrical circuit, said housing having a top wall, a bottom wall, and connecting side walls, an accurate leaf spring, one end of said leaf spring in fixed relation to said top wall, the opposite end of said leaf spring curved above the top wall, a condulet, said condulet having a base, side walls,

cable inlet and cable outlet tubes, and a removable cover, said housing positioned inside the condulet with the bottom wall of the housing resting on the base of the condulet, the distance between the bottom wall of the housing and the topmost part of the arcuate leaf spring when in a free condition greater than the distance between the base of the condulet and the top edge



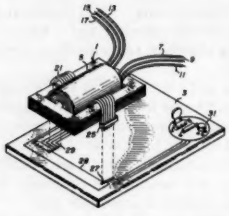
of the side walls of the condulet, the inner surface of the condulet cover engaging the topmost part of the leaf spring and bending it down in such a way that the engagement between the inner surface of the condulet cover and the leaf spring resiliently holds the housing in position inside the condulet without interfering with the cable inlet and cable outlet tubes which communicate with the interior of the condulet.

4,249,229

TRANSFORMER HAVING NOVEL MULTIPLE WINDING AND SUPPORT STRUCTURE AND METHOD OF MAKING SAME

Thomas E. Hester, Ft. Wayne, Ind., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Aug. 28, 1978, Ser. No. 937,466
Int. Cl.³ H05K 7/02; H01F 15/02
U.S. Cl. 361—399 **14 Claims**



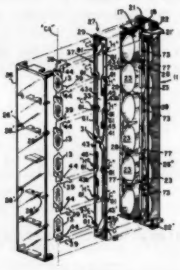
1. The electrical apparatus which comprises in combination:
a metal container means having an opening and a lid for closing said opening;
a printed circuit board of electrically insulative base material containing a plurality of flat electrical conductors on at least one surface thereof;
a first set of spaced electrical terminals and a second set of spaced electrical terminals;
a core of magnetic material forming a magnetic circuit, said core including a center core leg and first and second outer core legs located on opposite sides of said center leg and extending parallel thereto to define therebetween a coil-receiving window;
electrical coil means having an axially extending central passage comprising a first primary winding containing a first multiple number of turns of enamel insulated electrical wire and at least one secondary winding comprising a second multiple number of turns, greater than said first multiple number, of enamel covered wire with said first winding overlying said second winding and said coil including an axially extending passage, said electrical coil means being mounted along the axis thereof on said center core leg with a clearance space between the outer periphery thereof and each of said outer core legs;
an elongate relatively flat cable means having a width substantially greater than the thickness thereof and containing at least three spaced parallel conductors extending between a first and second end of said cable means in electrical insulated relationship with one another;
said cable means extending in a loop about the periphery of said electrical coil means and over an arcuate distance therearound of greater than 180 degrees but less than 360 degrees and extending through the clearance space between said periphery of said coil means and at least one of said outer core legs;
means electrically and mechanically coupling said first end of said cable means to corresponding terminals in said first set of electrical terminal means on said printed circuit board;
and means electrically and mechanically coupling the conductors at said second end of said cable to corresponding ones of said electrical terminals in said second set of electrical terminal means; and wherein each of said core, coil means, cable and printed circuit board being disposed within said container means with said core and electrical coil means supported on a surface of said printed circuit board;
a plurality of electrical components mounted on said circuit board in an electrical circuit, and means, including said plurality of flat electrical conductors on said circuit board, adapted to electrically interconnect said electrical components in circuit with each of said primary and secondary winding of said coil means, and said first and second set of electrical terminal means; and electrically insulative potting material disposed within said container for encasing said circuit board, core, coil means, cable and electrical components therewithin.

4,249,230

PHOTOFLASH UNIT UTILIZING CIRCUIT BOARD HAVING FLASHLAMPS CLAMPED THERETO

William T. Colville; David W. Mecone, and Donald W. Hartman, all of Williamsport, Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Sep. 4, 1979, Ser. No. 72,527
Int. Cl.³ F21K 5/02
U.S. Cl. 362—13 **13 Claims**



1. A multilamp photoflash unit comprising:
a circuit board including an electrically insulative strip member and lamp-firing circuitry located on a first surface of said strip member, said strip member including at least two peripheral side walls; and
a plurality of electrically-activated flashlamps, each of said flashlamps including a light-transmitting envelope and a pair of electrically conductive lead-in wires projecting from said envelope, each of said lead-in wires clamped

about a respective one of said peripheral side walls of said strip member to secure said flashlamps to said strip member and electrically connect said flashlamps to said lamp-firing circuitry located on said first surface.

4,249,231

LUMINOUS EDGE LIGHTED DEVICE

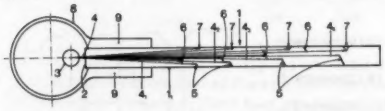
Jean-Claude Decaux, Paris, France, assignor to Jean Claude Decaux Paris Publicite Abribus, France

Filed Apr. 3, 1979, Ser. No. 26,583

Claims priority, application France, Apr. 4, 1978, 78 09876

Int. Cl.³ F21V *7/04*

U.S. Cl. 362—31 **8 Claims**



1. A luminous device comprising in combination:

at least one panel of non-opaque material having edges and faces and acting as a support for indicia conveying information;

at least one source of lighting located behind and to the side of said indicia, said lighting source being adapted to project light in a direction parallel to said indicia; and

a plurality of reflecting surfaces disposed directly behind said indicia in fixed relationship to the latter and in a location to intercept light from said source thereby dividing the beam of light from said source into a plurality of pencils of light which are reflected past said indicia.

4,249,232

HEADLAMP, PARTICULARLY FOR MOTOR VEHICLES

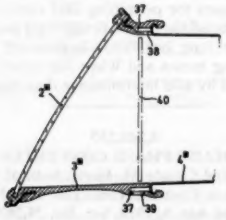
Heinz Dick, Odenthal, Fed. Rep. of Germany, assignor to Ford Motor Company, Dearborn, Mich.

Filed Jun. 29, 1978, Ser. No. 920,566

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1977, 2732895

Int. Cl.³ B60Q *1/06*

U.S. Cl. 362—61 **1 Claim**



1. A headlamp for motor vehicles, which forms a closed headlamp unit comprising a substantially symmetrical reflector, an asymmetrical spacer attached to said reflector and extending forward of said reflector, and a glass lens attached to said spacer, characterized in that said spacer is designed as a carrier having attachment means for securing said headlamp unit in a body opening, and is attached to said reflector in sealed fashion by means of a pivoting ring arrangement; and

the end of said spacer which is disposed toward said reflector including an air supply passage extending around the whole circumference of said headlamp, said air supply passage being in situ formed, said air supply passage communicating through a first opening with the interior of said headlamp and through a second opening, with the outside atmosphere.

4,249,233

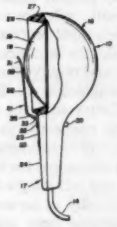
HAND HELD LIGHT HAVING BELT CARRYING CLIP AND BELT MOUNTING SHEATH THEREFOR

James W. Gatton, P.O. Box 27, Belleville, Ohio 44813

Filed Mar. 12, 1979, Ser. No. 19,778

Int. Cl.³ F21L *15/08*; F21V *21/08, 33/00*

U.S. Cl. 362—103 **10 Claims**



1. A hand-held light having a belt carrying clip comprising

an electrical lamp assembly including a housing and an electrical lamp supported in said housing in fixed relationship thereto, said electrical lamp having a surface of predetermined configuration from which light can be emitted, and

a carrying clip mounted on said housing and formed from a relatively rigid material and including a free end portion of plate-like configuration which extends over the lamp surface to a predetermined distance in superposed relationship to said lamp surface for gripping of a belt therebetween in frictionally clamped relationship.

4,249,234

PORTABLE LUMINAIRE WITH FLUORESCENT LANTERN

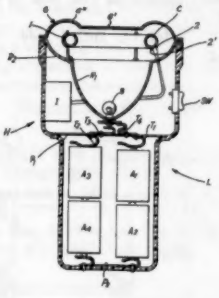
Sae-Soon Park, 307 Dongjak-dong, Gwanak-gu, Seoul, and Han-Joo Jung, 139-144 Kaebong-dong, Yungdeungpo-gu, Seoul, both of Rep. of Korea

Filed Jul. 14, 1978, Ser. No. 924,847

Claims priority, application Rep. of Korea, Aug. 24, 1977, 5089

Int. Cl.³ F21L *7/00*

U.S. Cl. 362—228 **2 Claims**



1. In a portable electric lamp structure having a housing, provided with an opening at one end thereon, a light-transmitting lens mounted on said housing for covering said opening, a substantially annular parabolic reflector mounted on the housing and opening outwardly toward said lens, an incandescent

lamp positioned substantially at the focal part of said parabolic reflector, a self-contained direct-current electric power source positioned within the housing, and manual switch means for electrically connecting the power source to the incandescent lamp for energizing same, the improvement comprising a curved annular reflector disposed adjacent the outer free edge of said parabolic reflector and extending radially outwardly therefrom, said curved reflector having the radially inner edge thereof positioned in close proximity to the radially outer edge of said parabolic reflector, said curved reflector being of a smooth curvature as it projects radially outwardly from said inner edge so as to also project axially forwardly from the outer edge of said parabolic reflector toward said lens, a ring-like fluorescent lamp positioned rearwardly of said lens and in front of said curved reflector in concentric relationship with said parabolic reflector, said ringlike fluorescent lamp having a diameter which is of a magnitude at least similar to the diameter of the parabolic reflector adjacent its outer free edge, inverter means electrically connected to said fluorescent lamp for converting direct current to alternating current, said switch means being electrically connected between said power source and said inverter means and including a first manually-actuated switch connected electrically in series between said power source and said incandescent lamp and a second manually-actuated switch connected in series between said power source and said fluorescent lamp, whereby said lamps may be energized individually or jointly, said lens including a substantially flat center portion which is substantially aligned with the parabolic reflector and is positioned so as to be coaxially aligned with the open region defined within the interior of the ringlike fluorescent lamp, said ringlike fluorescent lamp being disposed radially outwardly of said center portion, said lens also including an outer annular portion which surrounds said center portion and is of a smoothly curved and outwardly rounded convex configuration when viewed in a radial plane, said curved outer portion of the lens cooperating with the curved reflector to define an enlarged annular region therebetween, and said ringlike fluorescent lamp being disposed in said annular region so that the curved convex outer portion of the lens provides for more uniform sideward diffusion of light over a large transverse area when the ringlike fluorescent lamp is energized.

4,249,235

CIRCUIT ARRANGEMENT FOR INEXPENSIVE PRODUCTION OF THREE-PHASE CURRENT FROM DC CURRENT

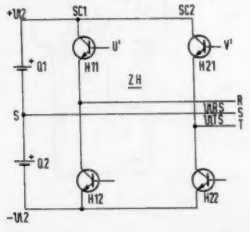
Josef Immler, Puchheim, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 26, 1979, Ser. No. 15,049

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1978, 2810068

Int. Cl.³ H02M *7/44*

U.S. Cl. 363—2 **3 Claims**



1. A circuit arrangement for producing three-phase current from dc current, comprising:

a pair of dc voltage sources connected in series at a junction point to provide a reference voltage at said reference point; and

a chopper circuit connected in parallel with said series connected sources and operable to produce, from the dc voltage of said sources, two ac voltages phase-displaced 60° from each other.

4,249,236

CONTROLLER FOR POWER CONVERTER

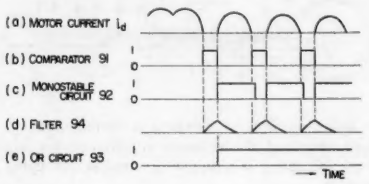
Tsutomu Omae, and Toshiko Matuta, both of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Sep. 4, 1979, Ser. No. 72,317

Claims priority, application Japan, Sep. 4, 1978, 53-107610

Int. Cl.³ H02P *13/26*

U.S. Cl. 363—87 **4 Claims**



1. A controller for power converter having a power converter which is controlled in firing phase and thus supplies variable power to a load, a current control means for producing a firing angle instruction in accordance with the current difference between a current target value and a current actual value flowing through said load, a nonlinear compensation means for producing a predetermined correction angle instruction in accordance with said current actual value during the current intermittent region of the current through said load, an adding means for adding said firing angle instruction to said correction angle instruction, and a firing control means for controlling the firing phase of said power converter in accordance with the added value from said adding means, said controller for power converter further comprising:

a state-discriminating means for discriminating between a steady-state condition and a transient state in accordance with the magnitude of said current difference;

an intermittence detecting means for detecting that said load current has entered in a current intermittent region; and

a switching means for permitting said correction angle instruction to be added to said firing angle instruction when the transient state occurence is detected by said state discriminating means and when the intermittent state is also detected by said intermittence detecting means.

4,249,237

ROTARY PHASE CONVERTER

Leroy B. Ronk, and Claude M. Hertz, both of Nokomis, Ill., assignors to Ronk Electrical Industries, Inc., Nokomis, Ill.

Filed Apr. 9, 1979, Ser. No. 28,263

Int. Cl.³ H02M *5/32*

U.S. Cl. 363—150 **6 Claims**

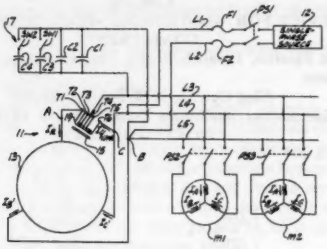
1. A rotary phase converter for connection to a single-phase a.c. power source and adapted to supply polyphase current to a polyphase electrical load, said converter comprising:

a dynamoelectric machine having at least three stator windings and at least first, second and third output terminals, said windings being oriented symmetrically with respect to each other both physically and electrically, each winding having a substantially equal number of active turns, said first and second terminals being adapted to be connected to the single-phase a.c. power source,

an autotransformer connected across the second and third terminals, said autotransformer having at least one tap positioned intermediate the ends thereof to serve as an

output of the converter, the first and second terminals also being outputs of the converter, and

at least one capacitor connected between the first terminal



and the autotransformer tap serving as a converter output, whereby the currents supplied from the converter outputs to the phases of the polyphase load are maintained substantially balanced at full load.

4,249,238

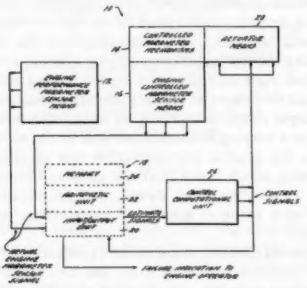
APPARATUS FOR SENSOR FAILURE DETECTION AND CORRECTION IN A GAS TURBINE ENGINE CONTROL SYSTEM

Henry A. Spang, III, Schenectady, N.Y., and Robert P. Wanger, Fairfield, Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation-in-part of Ser. No. 752,050, Dec. 20, 1976, abandoned. This application May 24, 1978, Ser. No. 909,235

Int. Cl.[3] **G05B** *17/02;* **F02C** *9/00*

U.S. Cl. 364—106 **14 Claims**



1. An improved gas turbine engine control system including:

sensor means for sensing actual engine performance parameters and actual engine controlled parameters, control computational means for generating control signals, actuator means for receiving said control signals and for modifying the controlled parameters in order to maintain a selected level of engine performance wherein the improvement comprises: failure indication and corrective action means disposed between said sensor means and said control computational means for receiving signals from said sensor means, for receiving said control signals, and for generating signals representing real time estimates of said actual engine performance parameters and of said actual engine controlled parameters while said engine is in operation, said estimate signals being transmitted to said engine control computational means in lieu of said actual engine performance and actual controlled parameter sensor signals.

4,249,239

HIGH-SPEED COUPLER FOR TRANSMISSION LINES OR COMPUTER PERIPHERALS WHICH EMPLOYS A SPECIAL MICROINSTRUCTION STRUCTURE

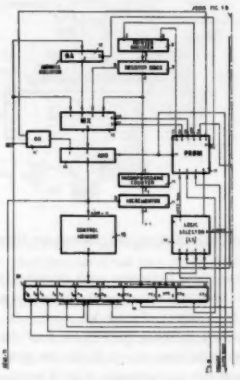
Jean-Francois Mescam, Plaisir, and Thomas Balla, Le Pecq, both of France, assignors to Compagnie Internationale Pour L'Informatique Cii-Honeywell Bull (Societe Anonyme), Paris, France

Filed Nov. 16, 1978, Ser. No. 961,203

Claims priority, application France, Nov. 21, 1977, 77 34915

Int. Cl.[3] **G06F** *3/00*

U.S. Cl. 364—200 **13 Claims**



1. A microprocessor comprising:

processing means for performing arithmetic logic operations on data;

a control memory in which microinstructions are stored;

means for addressing said control memory;

means for permitting the simultaneous coupling of external data receiving and data transmitting means and the execution by said processing means of arithmetic logic operations on data exchanged between the external data receiving and transmitting means, said means for permitting simultaneous coupling and execution of data including means for decoding microinstructions read from said control memory; and

the stored microinstructions including:

a zone indicating the source of an operand to be supplied as data to said processing means,

a zone indicating the particular arithmetic and/or logic operation to be performed by said processing means,

a zone indicating the destination of the result of the arithmetic and/or logic operation which is performed,

a zone indicating a coupling function, and

a zone indicating the source of the next control memory address of a microinstruction sequence.

4,249,240

ADDRESS SYSTEM FOR BUS INTERCONNECTED COMPUTER SYSTEM

Richard G. Barnich, Saline, Mich., assignor to Xycom, Inc., Saline, Mich.

Filed Mar. 2, 1979, Ser. No. 16,758

Int. Cl.[3] **G06F** *7/04, 13/00*

U.S. Cl. 364—200 **3 Claims**

1. A computer system comprising:

a plurality of digital devices;

a permanent address source forming part of each device, certain of the devices having an address consisting of m digits and other devices having an address consisting of m−n digits;

an address bus including m−n lines interconnecting all of

the devices and an additional n lines interconnecting those devices having m digit addresses;

comparator means forming part of each device which is operative to receive digital messages from the address bus lines to which the device is interconnected and an output from the device address source for generating an output signal upon identity between the two;

a decoder connected to said additional n address lines which is operative to generate a particular signal upon the occurrence of a particular signal pattern on those lines to which it is connected;

an interconnection between said decoder and each of the devices having addresses containing m—n digits operative to carry the output of said decoder;

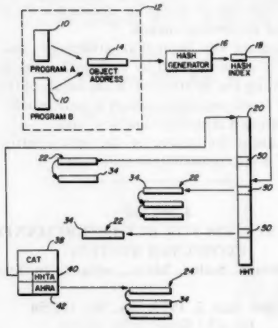
and logic means forming part of each of the devices having addresses containing m—n digits for generating an enable signal upon the occurrence of said particular signal from the decoder and an identity output signal from the comparator.

4,249,241

OBJECT ACCESS SERIALIZATION APPARATUS FOR A DATA PROCESSING SYSTEM

Gary F. Aberle; Gerald J. Balm; Viktors Berstis; Leon E. Gregg; Kuang-Chi Hu; James G. Ranweiler; William C. Richardson; Terry L. Schardt, and Charles T. Watson, all of Rochester, Minn., assignors to International Business Machines Corporation, Rochester, Minn.

Filed Oct. 23, 1978, Ser. No. 953,669
Int. Cl.[3] G06F *15/16, 9/46*
U.S. Cl. 364—200 **23 Claims**



23. In a data processing system, serialization apparatus for controlling access by tasks to objects upon which such tasks execute user instructions and machine instructions comprising:

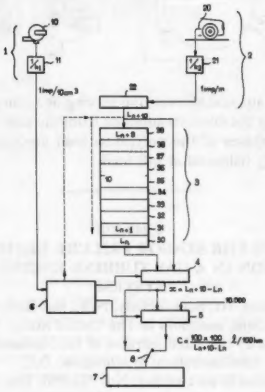
access restricting means responsive to both user instructions and machine instructions for automatically granting to a first task a first specified level of access to a specified object, so that the granting of the first specified level of access to the first task precludes a second task from obtaining a second specified level of access to the object.

4,249,242

DEVICE FOR MONITORING MEAN OPERATING CONDITIONS

Gerard Fleurier, Levallois-Perret, France, assignor to Jaeger, France

Filed Oct. 16, 1979, Ser. No. 85,385
Claims priority, application France, Oct. 19, 1978, 78 29786
Int. Cl.[3] G01F *9/02*
U.S. Cl. 364—442 **10 Claims**



1. A mean rating monitor comprising two input circuits delivering signals which respectively represent first and second physical quantities which vary conjointly, and processing means for determining continually the rate of change of one of the physical quantities relative to the other, the improvement comprising the first input circuit being adapted to emit successive pulses, each indicative of a predetermined quantum variation in said first physical quantity from the preceding pulse, the second input circuit comprising an integrating meter provided to contain a varying instantaneous total as the second physical quantity, the general incrementation rate of said integrating meter being much faster than the general rate of the pulses emitted by the first input circuit, and the processing means comprising a group of stores and an associated store control member,

said control member transferring a predetermined portion of the instantaneous total from the meter into one of the stores, in response to each pulse emitted by the first circuit while eliminating the oldest total registered in the stores, and a subtractor which is excitable so as to supply the difference between a recent total contained in the integrating meter or one of the stores and a former total contained in one of the stores, the quantity available at the output of the subtractor representing each time the mean rate of change of the second physical quantity as a function of the first physical quantity.

4,249,243

AUTOMATIC OPERATING SYSTEMS OF MACHINE TOOLS AND METHOD

Tetsu Yoshida, and Isao Morimoto, both of Numazu, Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 26, 1978, Ser. No. 955,173
Claims priority, application Japan, Feb. 11, 1977, 52/131848
Int. Cl.[3] G06F *15/46*
U.S. Cl. 364—474 **15 Claims**

1. An automatic operating system of a machine tool having

a spindle on which a tool is mounted for machining a workpiece mounted on a machining area of said machining tool in accordance with a numercially controlled machining program, said system comprising:

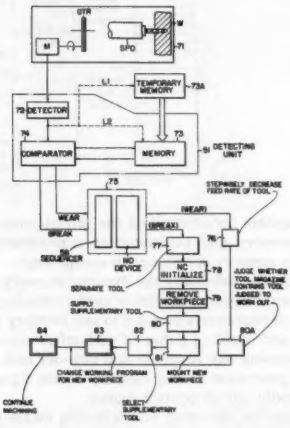
tool storage means (MG1) containing a plurality of tools for use on said machine tool;

means (72) for detecting a machining load while said workpiece is machined by a tool;

memory means (73) including:

a first memory having first and second memory areas corresponding to the tools contained in said tool storage means, said first memory area being adapted to store a first data which is referred to for judging a broken state of said tool on said spindle, and said second memory area being adapted to store a second data which represents that said tool has been judged to be broken in accordance with said first data; and

a second memory in which a third data is stored representing a machining load detected by said detecting means after machining operation has changed to an actual normal cutting state, said third data being compared with said first data during said actual normal cutting state;



means (74) for reading out said first and third data from said first and second memories respectively and then comparing said read out data with each other to judge that said tool has been broken, and then storing said second data into said second memory area of said first memory corresponding to said tool when the judgement of the broken state has been made;

means (75) responsive to the judgement of the broken state of said tool for interrupting the machining of said workpiece by said tool;

means (77) for moving said spindle relative to said workpiece to separate said tool therefrom;

means (79) for removing said workpiece out of said machining area;

means (81) for mounting another workpiece on said machining area;

means (83) for selecting a machining program corresponding to said another workpiece;

means (82) for selecting a tool out of said tool storage means for exchanging the selected tool with said tool judged to be broken; and

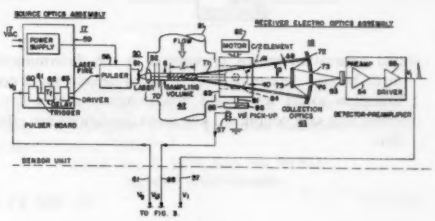
means (84) for starting machining operation of said another operation with said selected tool.

4,249,244

ELECTRO-OPTICAL SYSTEM AND METHOD AND APPARATUS FOR PROVIDING AUTOMATICALLY-COMPENSATING, TRACEABLE CALIBRATION AND ZEROING FOR LIGHT SCATTERING DEVICES

Frederick M. Shofner; Arthur C. Miller, Jr., and Gerhard Kreikebaum, all of Knoxville, Tenn., assignors to PPM, Inc., Knoxville, Tenn.

Filed May 3, 1978, Ser. No. 902,510
Int. Cl.³ G01N *21/00*
U.S. Cl. 364—525 **74 Claims**



1. A self-diagnostic electro-optical measurement system for providing in situ measurements of the physical properties of materials comprising means for producing a beam of substantially monochromatic electromagnetic radiation, receiver optics means for collecting and focusing radiation, a sampling volume disposed between said means for producing said beam of radiation and said receiver optics means, said receiver optics means having a projected acceptance cone whose projection intercepts said beam of radiation, said sampling volume being axially defined by the proximal and distal points of interception of said beam of radiation by said projected acceptance cone and transversely by said beam, means for directing said beam of radiation through said sampling volume for impingement upon an object whose properties are to be measured, said receiver optics means including detector means for receiving the focused radiation and developing an analog signal related to the intensity of radiation directed onto said detector means and optical means for collecting and focusing onto said detector means radiation scattered from said sampling volume traversed by said beam and calibration/zero control means disposed between said sampling volume and the receiver optics means for periodically blocking said beam and directing a predetermined fraction of said beam onto said optical means and for periodically interrupting said scattered radiation such that said analog signal includes a plurality of time varying signal components including a calibration signal component, a zero signal component and a measurement signal component, means for processing said analog signal to develop individual control signals corresponding to said signal components and for providing automatic compensation of the entire electro-optical train without interruption of the measurement process and means responsive to said individual control signals for developing diagnostic control information signals indicative of the operational status of the measurement system.

4,249,245

CONFIRMATION SOUND GENERATION FOR INDICATING EFFECTIVE KEY INPUT OPERATION

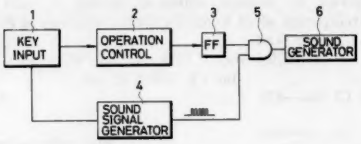
Akira Nakanishi, Sakurai, and Kazumitsu Miyakoshi, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 20, 1979, Ser. No. 22,378
Claims priority, application Japan, Mar. 24, 1978, 53-34589
Int. Cl.³ G08B *21/00*
U.S. Cl. 364—710 **7 Claims**

1. A confirmation sound generation system for an electronic apparatus which includes a key input means for conducting key input operations and thereby introducing desired informa-

tion into said electronic apparatus, said confirmation sound generation system comprising:

determination means for determining whether the conducted key input operations are effective or ineffective; and



sound generation means responsive to the determination made by said determination means for developing a confirmation sound when said determination means determines that said conducted key input operations are effective.

4,249,246

PROGRAMMABLE LOGIC ARRAY FOR GENERATING EOR SUMS OF INPUT SIGNALS

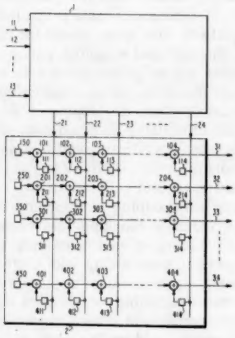
Takashi Nanya, and Takeo Tanaka, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Feb. 27, 1979, Ser. No. 15,841

Claims priority, application Japan, Feb. 27, 1978, 53-22663; May 19, 1978, 53-60262

Int. Cl.[3] **H03K** *19/20*

U.S. Cl. 364—716 **4 Claims**



1. A programmable logic array comprising:

a logical product (AND) term generator having row and column lines arranged on a semiconductor surface in row and column directions and a plurality of AND elements disposed at the intersections of said row and column lines, said AND term generator being programmable to provide output signals on its column lines which are a given function of input signals on its row lines; and

an Exclusive OR (EOR) term generator having a plurality of logic constant signal lines and a plurality of EOR elements, each of said logic constant signal lines being externally supplied with logic constant signals and each of said logic constant signal lines being coupled to said logical product term generator output signals through a plurality of said EOR elements, said EOR term generator having output lines each of which is coupled to the output of one of said plurality of EOR elements and on which are provided signals corresponding to EOR sums of various combinations of said input signals.

4,249,247

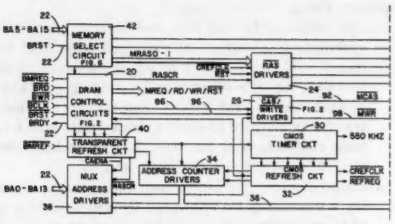
REFRESH SYSTEM FOR DYNAMIC RAM MEMORY

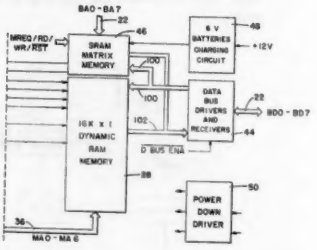
Narendra M. Patel, San Antonio, Tex., assignor to NCR Corporation, Dayton, Ohio

Filed Jan. 8, 1979, Ser. No. 1,983

Int. Cl.[3] **G11C** *13/00;* **G06F** *13/00*

U.S. Cl. 364—900 **14 Claims**





1. A system for controlling the refresh operation of a dynamic memory unit connected to a processing unit which generates memory access signals comprising:

a. means for refreshing the dynamic memory unit;

b. means for generating first periodic refresh control signals;

c. means operatively coupled to said memory unit for selecting and enabling either of said refreshing means or said processing unit access to said memory unit in response to the generation of said memory access signal or said first periodic refresh control signals;

d. means for operating said selecting means to enable said processing unit and said refreshing means access to said memory unit in accordance with the first of said signals generated, said operating means generating a first control signal upon completion of the access operation;

e. and means responsive to the simultaneous generation of said first periodic refresh control signals and said access signal for disabling said processing unit when said selecting means is operated to give said refreshing means access to said memory unit and operating said selecting means to give said processing unit access to the memory unit in response to the generation of said first control signal.

4,249,248

PROGRAMMABLE SEQUENCE CONTROLLER WITH AN ARITHMETIC OPERATION FUNCTION

Toshihiko Yomogida, Kariya, and Tsuyoshi Yokota, Okazaki, both of Japan, assignors to Toyoda-Koki Kabushiki-Kaisha, Aichi, Japan

Filed Feb. 23, 1979, Ser. No. 14,280

Claims priority, application Japan, Feb. 27, 1978, 53-21940

Int. Cl.[3] **G06F** *15/46*

U.S. Cl. 364—900 **4 Claims**

1. A programmable sequence controller comprising in combination:

a sequence program memory for storing a sequence control

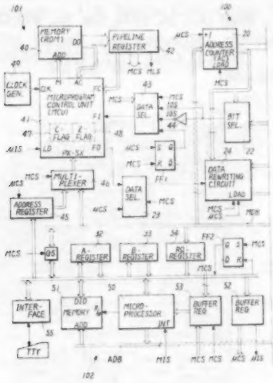
program composed of a plurality of sequence instructions, each of said sequence instructions including any one of a test command; an output command and an arithmetic operation command in addition to address data;

a program counter for selectively designating memory addresses of said sequence program memory so as to successively read out therefrom said sequence instructions;

input and output selecting means responsive to address data included in any sequence instruction read out from said sequence program memory for selectively designating a plurality of input and output elements;

logic operation processing means connected to said program counter for controlling the content of said program counter and also connected to said input and output selecting means and said sequence program memory for writing the operational status signal of any input element, designated by said input and output selecting means, into a test flag provided therein under a test condition designated by said test command supplied from said sequence program memory, said logic operation processing means being adapted to selectively output energization and deenergization signals based upon the status of said test flag when receiving said output command from said sequence program memory;

output drive means connected to said output elements, said input and output selecting means and said logic operation



processing means for energizing or deenergizing any output element, designated by said input and output selecting means, in response to said energization and deenergization signals;

interrupting means included in said logic operation processing means for outputting a first interrupt signal when said logic operation processing means receives said arithmetic operation command from said sequence program memory;

arithmetic operation processing means including data storage means for receiving digital data from external devices and responsive to said interrupt signal for arithmetically processing said digital data;

wherein said logic operation processing means comprises:

a microprogram memory for storing a plurality of microprogram instructions;

an inverter for inverting said operational status signal of said any selected input elements;

a data selector responsive to one of said microprogram instructions read out from said microprogram memory for selectively outputting said operational status signal and the inverted signal thereof respectively as first and second status signals; and

a microprogram control unit including said test flag therein and connected to said sequence program memory and said microprogram memory for applying memory address data to said microprogram memory upon each occurrence of receiving a first part of any sequence instruction and a first part of any microprogram instruction read out respectively from said sequence program memory and said microprogram memory, said microprogram control unit being connected to said data selector and said output drive means for writing one of said first and second status signals applied from said data selector into said test flag when receiving a second part of said one of said microprogram instructions and for selectively outputting said energization and deenergization signals to said output drive means in dependence upon the status of said test flag when receiving said second part of another microprogram instruction.

4,249,249

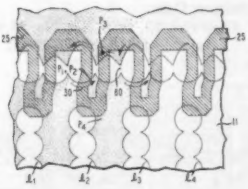
ION-IMPLANTED BUBBLE MEMORY

Peter I. Bonyhard, and Terence J. Nelson, both of New Providence, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 3, 1979, Ser. No. 99,552

Int. Cl.³ G11C *19/08*

U.S. Cl. 365—36 **6 Claims**



1. A magnetic bubble memory comprising a layer of material in which magnetic bubbles can be moved, a pattern of ion-implanted regions in said layer for defining a plurality of minor loops for recirculating bubbles therein through transfer positions in response to a field reorienting cyclically in the plane of said layer, said pattern also defining first and second multistage paths associated with said first ends, and transfer means for moving a bubble pattern selectively from said transfer positions to associated positions in said second path through associated positions in said first path.

4,249,250

COMPUTER STORAGE ARRANGEMENTS WITH OVERWRITE WARNING

Roger S. Scowen, Hampton, and John L. Rodgers, Wokingham, both of England, assignors to National Research Development Corporation, London, England

Filed Sep. 28, 1979, Ser. No. 80,774

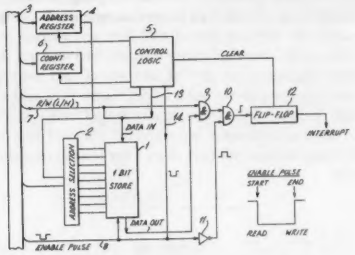
Claims priority, application United Kingdom, Sep. 29, 1978, 38634/78

Int. Cl.³ G11C *8/00*

U.S. Cl. 365—230 **7 Claims**

1. A computer storage arrangement including a plurality of numerically addressed storage locations additional to the storage locations of a main store and each associated with a corresponding storage location in the main store, said additional storage locations each being arranged to store at least a single binary digit, means for writing a binary digit of one value at the associated additional storage location whenever a word is written into a storage location of the main store, means for writing the other value of the binary digit into the additional storage location when the contents of the associated storage location in the main store are read, and means for generating a

warning signal when an attempt is made to overwrite the contents of a storage location in the main store when the binary



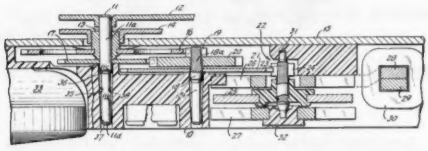
digit in the associated additional storage is of the said one value.

4,249,251

GEAR TRAIN FOR TIMEPIECE WITH A STEPPING MOTOR

Paul Wuthrich, Watertown, Conn., assignor to Timex Corporation, Middlebury, Conn.

Filed Oct. 29, 1979, Ser. No. 88,920
Int. Cl.[3] G04B *19/00, 29/00*
U.S. Cl. 368—76 **5 Claims**



1. An electronic stepping motor timepiece comprising:
means generating time-based electrical driving signals,
a stepping motor having a rotor and pinion adapted to periodically rotate in response to said signals,
a frame carrying said stepping motor and having at least one bore defining spaced larger and smaller diameter journal bearings, within said bore,
at least one arbor disposed in said bore having a journal portion with spaced larger and smaller diameter journals, and an overhung portion extending from the frame,
a center wheel attached to said overhung arbor portion and a bushing rotatably disposed on the arbor having an hour wheel attached thereto,
an intermediate gear and pinion assembly rotatably mounted on the frame and driving the center wheel and hour wheel,
said stepping motor pinion directly driving said gear and pinion assembly.

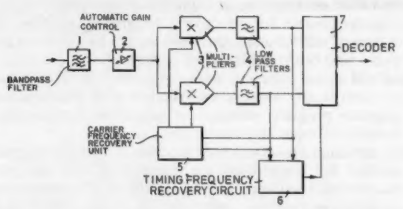
4,249,252

TIMING FREQUENCY RECOVERY

Hagen Hofmeister, Korb, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 24, 1978, Ser. No. 936,519
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1977, 2738279
Int. Cl.[3] H04J *3/06*
U.S. Cl. 370—100 **10 Claims**

1. A method for recovering the timing frequency in a modulated data signal receiver containing a timing frequency generator, comprising: demodulating a received signal with the aid of carriers which are shifted by 90° in phase relative to one another to form two demodulation products; forming the sum of the squares of the two demodulation products; and determining changes in the value of that sum with respect to time to



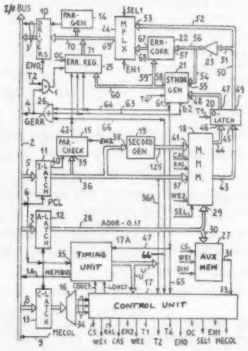
provide characteristic values which represent the adjustment criterion for the timing frequency generator.

4,249,253

MEMORY WITH SELECTIVE INTERVENTION ERROR CHECKING AND CORRECTING DEVICE

Claudio Gentili, Cornaredo; Calogero Mantellina, Cerro Maggiore, and Alessandro Scotti, Pregnana Milanese, all of Italy, assignors to Honeywell Information Systems Italia, Milan, Italy

Filed Dec. 26, 1978, Ser. No. 973,448
Claims priority, application Italy, Dec. 23, 1977, 31170 A/77
Int. Cl.[3] G06F *11/10;* **G11C** *29/00*
U.S. Cl. 371—38 **6 Claims**



1. A data processing memory apparatus including a data storage module having a plurality of addressable locations for storing in each said location digital information and an error correcting code related to said digital information, comprising:
error detecting/correcting code generation means for generating a correcting code related to each digital information segment to be stored in said module, said correcting code being stored in said module with said related digital information segment;
error syndrome generation means receiving a digital information segment and the related correcting code read out from said module and for generating an error syndrome indication based thereon;
error correction means receiving the digital information segment read out from said module and the error syndrome indication related to said digital information segment and delivering a corrected digital information segment to an output of said memory apparatus;
a direct circuit path for bypassing said error correction means and for delivering the digital information segment read out from said module directly to said output of said memory apparatus;

an auxiliary memory having a plurality of auxiliary addressable locations, each of said auxiliary locations being related to at least one addressable location of said data storage module and storing an error or no error indication;

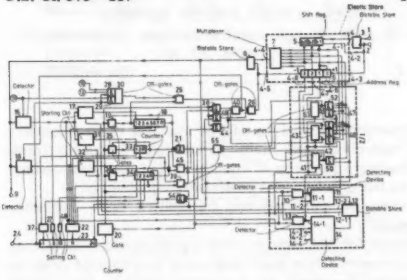
timing means generating timing pulses for timing read cycles of said data storage module having different durations; and

control means for controlling readout operations from said data storage module at a selected location and readout operations from said auxiliary memory at the auxiliary location related to said selected location and for enabling in a mutually exclusive manner said error correction means or said direct circuit path to deliver the digital information segment read out from said selected location to said output, and for further controlling said timing means to generate timing pulses defining a readout cycle having a duration selected from different durations in response to the digital information read out from said auxiliary location.

4,249,254
ARRANGEMENT FOR RESTITUTING SELECTION SIGNALS

Robert Bodart, and Jean P. A. R. J. Werts, both of Brussels, Belgium, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 2, 1979, Ser. No. 8,804
Int. Cl.[3] H04L *25/38*
U.S. Cl. 375—117 **1 Claim**



1. In a system for restituting control signals from an isochronous signal, the binary signal of elements of start polarity A and stop polarity 2 of which represent the sampling values having been taken at sampling instants which have a given position relative to the signal transitions in the control signals, said system including a buffer receiving store to which the isochronous signal is applied, the method comprising:

a. detecting a Z-A transition at the output of said receiving store;

b. applying A-polarity for at least a first predetermined period to the system output as the control signal upon detection of said Z-A transition in step a;

c. detecting the polarity of the output of said receiving store after said first predetermined period;

d. if Z-polarity is detected in step c, replacing the A-polarity, being applied to the system output, with Z-polarity until a signal element A appears at the output of the store whereupon the cycle from step a is repeated;

e. if Z-polarity is not detected in step c, continuing the application of A-polarity to the system output for a maximum of a second predetermined period of time;

f. detecting the occurrence of the signal combination ZZA or AZA in the output of said receiving store when said second predetermined period is initiated in step e;

g. if said second predetermined period expires prior to the detection of step f, shifting the signal elements in the receiving store relative to the output thereof over one or two positions until a signal element Z is detected at the output of the receiving store;

h. if said detection of step f occurs prior to the expiration of said second predetermined period, shifting the signal elements in the receiving store relative to the output thereof over one position causing the signal element Z to appear at the output of the store;

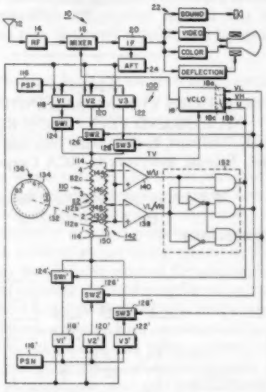
i. applying Z-polarity to the system output for a third predetermined period of time; and

j. after said third predetermined period shifting the signal elements in the receiving store relative to the output thereof for zero, one or two positions until a signal element A appears at the output of the receiving store whereupon the cycle from step a is repeated.

4,249,255
CONTINUOUS TUNING ARRANGEMENT FOR A MULTIBAND TELEVISION RECEIVER

Thomas E. Molinari, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 30, 1978, Ser. No. 965,217
Int. Cl.[2] H04B *1/16*
U.S. Cl. 455—176 **7 Claims**



1. In a system for tuning a receiver to all the channels in at least first and second bands in response to respective magnitudes of a tuning voltage, apparatus comprising:

first and second terminals;

a continuous resistive element coupled between said terminals, said resistive element having first and second sections corresponding to said first and second bands, respectively;

voltage coupling means for coupling voltages to said first and second terminals;

a movable contact;

means for moving said movable contact along said resistive element to select ones of said channels, said tuning voltage being generated at said movable contact; and

position detecting means for detecting the position of said movable contact along said resistive element;

said voltage coupling means including at least first switching means coupled to said position detecting means for selectively coupling a first voltage to said first terminal when said movable contact is in said first section and a second voltage to said first terminal when said movable contact is in said second section, said first and second voltages being selected so that all of said channels in said first and second bands are tuned as said movable contact is continuously and consecutively moved along said resistive element.

6. A system for tuning a receiver to various channels in first and second bands, comprising:

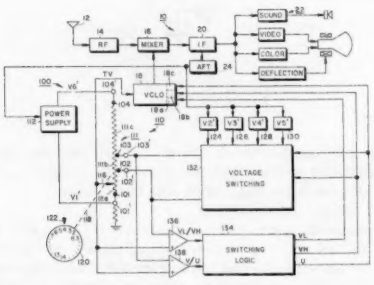
a tunable circuit having a frequency response determined in response to a tuning voltage;

first and second terminals;
a resistive element coupled between said first and second terminals;
means for coupling first and second voltages to said first and second terminals;
a movable contact;
means for moving said movable contact along said resistive element, said tuning voltage being generated at said movable contact;
voltage divider means coupled between said first and second terminals for generating an output voltage having a magnitude substantially equal to the magnitude of said tuning voltage corresponding to a boundary between said first and second bands;
comparator means responsive to said output voltage and said tuning voltage for generating a control voltage having a first level when the magnitude of said tuning voltage is less than the magnitude of said output voltage of said voltage divider and a second level when the magnitude of said tuning voltage is greater than the magnitude of said output voltage of said voltage divider; and
first means selectively enabled in response to said first level of said control voltage for determining the frequency range of said tunable circuit in said first band and second means selectively enabled in response to said second level of said control voltage for determining the frequency range of said tunable circuit in said second band.

4,249,256
CONTINUOUS TUNING ARRANGEMENT FOR A MULTIBAND TELEVISION RECEIVER

Thomas E. Molinari, Indianapolis, Ind., and Dal F. Griepentrog, Taipei, Taiwan, assignors to RCA Corporation, New York, N.Y.

Filed Nov. 30, 1978, Ser. No. 965,201
Int. Cl.³ H04B *1/06*
U.S. Cl. 455—180 **8 Claims**

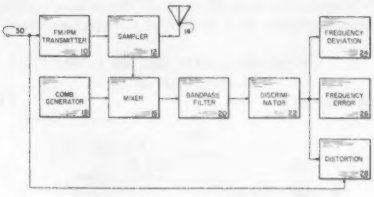


1. A tuning system for tuning a receiver to various channels in at least a first and a second tuning band, comprising:
a frequency tunable circuit;
voltage variable means for determining the frequency response of said tunable circuit in response to a tuning voltage, said tuning voltage having first, second, third and fourth magnitudes corresponding to the lowest frequency channel in said first band, the highest frequency channel in said first band, the lowest frequency channel in said second band and the highest frequency channel in said second band, respectively;
a continuous resistive element having first, second and third points defining first and second consecutive and continuous sections corresponding to said first and second tuning bands, respectively;
a movable contact;
means for moving said movable contact along said resistive element;
position detecting means for determining when said movable contact is in said first and second sections of said resistive element; and
voltage coupling means responsive to said position detecting means for selectively coupling voltages to said resistive element to develop first and second voltages corresponding to said first and second magnitudes of said tuning voltage at said first and second points, respectively, when said movable contact is in said first section of said resistive element and to develop third and fourth voltages corresponding to said third and fourth magnitudes of said tuning voltage at said second and third points, respectively, when said movable contact is in said second section;
said tuning voltage being developed at said movable contact.

4,249,257
RADIO FREQUENCY SIGNALS ANALYZER

Kenneth J. Campbell, Solana Beach, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 1, 1977, Ser. No. 829,756
Int. Cl.³ H04B *1/02, 17/00*
U.S. Cl. 455—115 **12 Claims**



1. Apparatus for analysis of FM and PM radio frequency signals transmitted by a multi-channel radio frequency transmitter having a plurality of equally spaced channels without regard to the selection of a channel, comprising:
(a) means for sampling said transmitted radio frequency signals;
(b) means for generating a first signal having a frequency spectrum wherein each frequency is separated from an adjacent frequency by a distance equal to the channel spacing of said transmitter;
(c) means coupled to said sampling means and to said generating means for mixing said first signal and said sampled signal thereby to produce an output including a replica of said transmitted signal at a predetermined frequency.

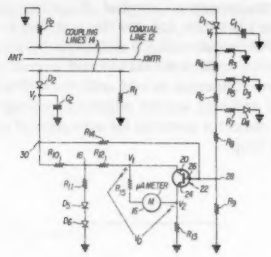
4,249,258
SELF-CALIBRATING VOLTAGE STANDING-WAVE RATIO METER SYSTEM

Tyson S. Craven, Cocoa, Fla., assignor to Georgia Tech Research Institute, Atlanta, Ga.

Filed Nov. 21, 1979, Ser. No. 96,535
Int. Cl.³ H04B *17/00*
U.S. Cl. 455—115 **9 Claims**

1. A self-calibrating metering system for measuring the voltage standing-wave ratio of a transmission line, comprising:
means for coupling off forward and reflecting voltage signals in said transmission line;
means for detecting the forward voltage signal on said transmission line;
means for detecting the reflected voltage signal on said transmission line;
a transistor connected to both said means for detecting the forward voltage signal and said means for detecting the reflected voltage signal; said transistor having a base element connected to said means for detecting the forward voltage signal to produce a current signal in the base element and a collector element connected to said means

for detecting the reflected voltage signal to develop a voltage signal at the collector; and said transistor having a grounded emitter element; and



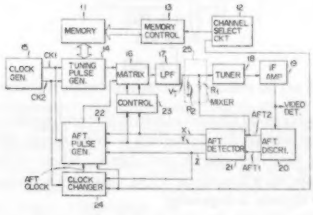
a metering device connected between the collector and the emitter of said transistor to measure the voltage across said transistor, with the measured value being proportional to the voltage standing-wave ratio value.

4,249,259

DIGITAL CHANNEL SELECTION APPARATUS

Kanji Oda, Kumagaya, and Hisashi Nakano, Saitama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 16, 1979, Ser. No. 30,525
Claims priority, application Japan, Apr. 21, 1978, 53/46682
Int. Cl.³ H04B *1/06*
U.S. Cl. 455—182 **3 Claims**



1. An electronic digital channel selection apparatus comprising:

digital signal generating means responsive to the selection of a channel to produce a digital signal corresponding to the selected channel;

digital-to-analog converter means for converting the digital signal to an analog tuning voltage;

voltage-controlled tuner means connected to said digital-to-analog converter means for converting a carrier frequency on the selected channel to an intermediate carrier frequency;

automatic fine tuning discriminator circuit means connected to said voltage-controlled tuner means and having an S-shaped frequency-voltage response centered at a predetermined intermediate frequency to produce an analog voltage signal whose magnitude depends upon the output carrier intermediate frequency of said voltage-controlled tuner means;

automatic fine tuning circuit means connected to said automatic fine tuning discriminator means and said digital-to-analog converter means for varying the tuning voltage of said digital-to-analog converter means in response to an output of the automatic fine tuning discriminator circuit means; and

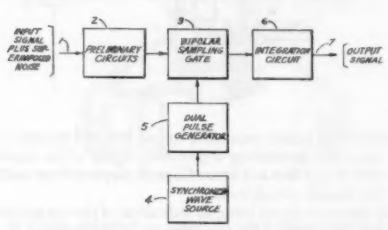
mixer means connected between said digital-to-analog converter means and said voltage-controlled tuner means for mixing a fraction of the analog voltage signal provided at an output of said automatic fine tuning discriminator circuit means with the tuning voltage provided at an output of said digital-to-analog converter means.

4,249,260

NOISE-REDUCING APPARATUS

Charles B. Fisher, 2850 Hill Park Rd., Montreal, Quebec, Canada (H3H 1T1), and Sidney T. Fisher, 53 Morrison Ave., Mt. Royal, Quebec, Canada (H3R 1K3)

Filed Jul. 27, 1978, Ser. No. 928,384
Int. Cl.³ H04B *1/12*
U.S. Cl. 455—296 **1 Claim**



1. A receiving apparatus for a signal with zero crossings at instants known to or ascertainable by said receiving apparatus, with superimposed noise, and with the spacing of said zero crossings less than the Nyquist interval for said signal, comprising:

a sampling device which samples said signal plus said superimposed noise, delivering a first sequence of samples of one polarity when driven by positive pulses, and a second sequence of samples of opposed polarity when driven by negative pulses, positive pulses being spaced at intervals not greater than the Nyquist interval for said signal, and

a generator of said negative and said positive pulses, producing pulses of each polarity successively, and a source of waves synchronized with said zero crossings of the timing device for said signal, driving said pulse generator, so that said pulses of one polarity occur approximately at said zero crossings of said signal, and said pulses of the opposite polarity occur approximately midway between said zero crossings of said signal, and

equalizing means for each of said sample sequences such that gain and delay for each of said sample sequences are substantially equal, and

integration means which simultaneously integrates said sample sequences.

4,249,261

SUPERHETERODYNE RADIO RECEIVER WITH NEARBY-STATION INTERFERENCE DETECTION

Minoru Ogita, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Oct. 22, 1979, Ser. No. 87,071
Claims priority, application Japan, Oct. 28, 1978, 53-133078
Int. Cl.³ H04B *1/12, 15/00, 17/00, 1/26*
U.S. Cl. 455—305 **11 Claims**

1. In a superheterodyne radio receiver including an RF amplifier stage and an IF amplifier stage,

the improvement comprising:

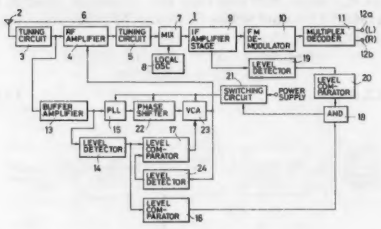
interference-detecting means associated with said RF amplifier stage and said IF amplifier stage for detecting the occurrence of an interference caused by reception of an interfering channel signal of an adjacent station at a frequency close to that of a desired station signal to be received by said radio receiver,

wherein said interference-detecting means comprises:

first circuit means for detecting the fact that an RF signal

level at said RF amplifier stage is higher than a first reference level and for delivering a first signal upon such detection;

second circuit means for detecting the fact that the IF signal level at said IF amplifier stage is lower than a second reference level and for delivering a second signal upon such detection; and



third circuit means responsive to said first and second circuit means for generating a detection signal when receiving both of said first and second signals supplied from said first and second circuit means,

said detection signal being an indication of the occurrence of said interference by the adjacent channel signal in said receiver.

4,249,262

TUNABLE MICROWAVE OSCILLATOR

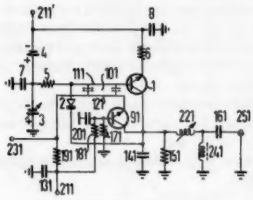
Josef Fenk, Ottenburg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Division of Ser. No. 767,530, Feb. 10, 1977, Pat. No. 4,150,344. This application Oct. 25, 1978, Ser. No. 954,587

Claims priority, application Fed. Rep. of Germany, Mar. 1, 1976, 2608451; Jul. 9, 1976, 2630992

Int. Cl.[3] **H04B** *1/28;* **H03B** *5/18*

U.S. Cl. 455—333 **7 Claims**



1. A semiconductor circuit for receiving electrical signals with a modulatable oscillator and a mixer, wherein said oscillator includes a first transistor (**1**) and a modulating diode (**2**), and the mixer includes a second transistor (**91**) of the same type as the first transistor (**1**), the emitter of said first transistor (**1**) is connected through a first resistor (**6**) to one terminal of a first constant voltage source (**4**) which supplies the emitter potential and said one terminal connected through a capacitor (**8**) to a ground terminal, a second adjustable voltage source (**3**), which has one side connected to ground terminal and its second terminal connected to the second terminal of said first constant voltage source and supplies the potential for the collectors of the two transistors (**1, 91**), the base of said first transistor (**1**) connected to one side comprising the anode of the modulation diode (**2**) and to the second terminals through a second resistor (**5**) of said first and second voltage sources (**4, 3**), the cathode of the modulation diode (**2**) connected to the collector of said first transistor (**1**), the emitter-base current circuit of said second transistor (**91**) inductively coupled to the base-collector current circuit of said first transistor (**1**), the emitter of the second transistor (**91**) connected to an input signal terminal (**231**) and the collector of said second transistor (**91**) connected to the collector of said first transistor (**1**), the base of said second transistor (**91**) connected through a third resistor (**171**) to the ground terminal of said second adjustable voltage source (**3**) which delivers the potential to the collectors of said two transistors (**1, 91**) and said collectors connected through a further capacitor (**141**) to said ground terminal, an output terminal connected to said collectors of said two transistors (**1, 91**) and said second adjustable voltage source (**3**) supplying the collector potential for activation of an intermediate frequency loop.

4,249,263

MIXER CIRCUIT

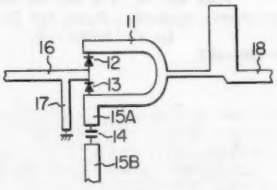
Keiro Shinkawa, and Chuichi Sodeyama, both of Yokohama, Japan, assignors to Hitachi, Ltd., Japan

Filed Nov. 2, 1979, Ser. No. 90,611

Claims priority, application Japan, Nov. 6, 1978, 53/136554

Int. Cl.[3] **H04B** *1/26*

U.S. Cl. 455—327 **9 Claims**



1. A mixer circuit formed of a strip line and applied with first and second signals for delivering a third signal obtained by combining said first and second signals, wherein one of said three signals has a frequency lower than the frequencies of the other two signals, comprising:

(a) a $\frac{1}{2}$ wavelength line having a length nearly equal to one half of the wavelength of each of two signals out of said first, second and third signals, the remaining signal having the lowest frequency;

(b) a series circuit of two diodes connected between both ends of said $\frac{1}{2}$ wavelength line, said diodes being arranged with the same polarity;

(c) first and second signal coupling means for coupling said two signals other than said lowest-frequency signal between a first connecting point and ground and between a second connecting point and ground, respectively, said first and second connecting points being defined respectively by the junction point of said diodes and one end of said $\frac{1}{2}$ wavelength line;

(d) third signal coupling means for coupling said lowest-frequency signal between said first connecting point and ground or between a third connecting point and ground, said third connecting point being defined by the middle point of said $\frac{1}{2}$ wavelength line: and

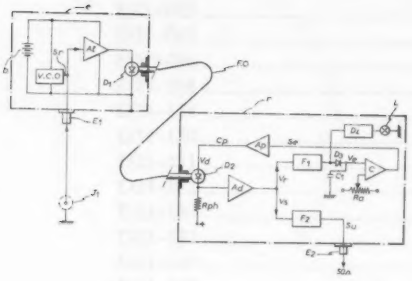
(e) means having a low impedance for said lowest-frequency signal, said means being connected between said first connecting point and ground or between said third connecting point and ground in accordance with said lowest-frequency signal being coupled between said third connecting point and ground or between said first connecting point and ground, respectively.

4,249,264

METHOD AND SYSTEM FOR TRANSMITTING SIGNALS BY FIBER OPTICS

Michel Crochet, Verneuil-sur-Seine, and Georges Lecot, Marly-le-Roi, both of France, assignors to Thomson-CSF, France

Filed Jul. 11, 1977, Ser. No. 814,811
Claims priority, application France, Aug. 6, 1976, 76 24153
Int. Cl.[3] H04B 9/00
U.S. Cl. 455—612 3 Claims



1. An analogic signal transmitting system of the kind comprising a transmitter with a light emitting diode and energized by a battery, and a receiver with a reception photodiode having two terminals, said light emitting diode and reception photodiode being connected by optical fibers, and in which the signal to be transmitted to the receiver output is applied to the transmitter input, comprising:

an oscillator producing a reference signal and having its output connected to the light emitting diode, said reference signal being superimposed upon the signal to be transmitted, said oscillator being an oscillator having its frequency controlled by the battery voltage;

an error detector having two inputs and an output;

a reference signal reforming filter;

a second filter having its input connected to the input of the reference signal reforming filter and its output connected to the receiver output;

means connecting the inputs of the filters to one of the terminals of the reception photodiode;

means connecting one of the error detector inputs to the reference signal reforming filter output;

means connecting the second error detector input to a source of predetermined voltage;

means modifying the level of the signal delivered by the reception photodiode and linked to the error detector output;

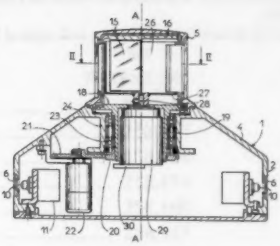
and means indicating the level of the battery charge and comprising a pulse integrating discriminator having its input linked to the output of one of the filters and an indicator light associated to the output terminal of the discriminator whereby to be activated if the mean value of the output signal from the discriminator is less than a predetermined threshold.

4,249,265

DEVICE FOR RECEIVING AND TRANSMITTING CODED LIGHT SIGNALS AND IFF SYSTEM INCORPORATING THIS DEVICE

Jean Y. Coester, Paris, France, assignor to Societe Anonyme de Telecommunications, Paris, France

Filed Sep. 27, 1979, Ser. No. 79,558
Claims priority, application France, Oct. 6, 1978, 78 28683
Int. Cl.[3] H04B 9/00; H01Q 15/80; H01S 3/00
U.S. Cl. 455—604 8 Claims



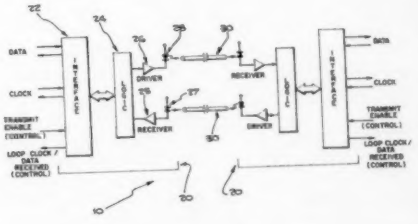
1. A device adapted to receive coded light signals and to transmit modulated light signals in the direction of the incident signals, comprising an omnidirectional detection device composed of a plurality of radiation sensors, an optical device for reflecting the light signal in its own direction, a recognition and encoding circuit connected to said sensors and an optical modulator operable to prevent the reflection of the light signal, said modulator being controlled by said circuit, said modulator comprising a shutter rotatable about the axis of the detection device, a member for driving the shutter controlled by the recognition and encoding circuit and a second circuit connected to the outputs of the sensors to determine which one of the sensors receives the incident beam, said second circuit delivering to the drive member a control signal for setting the initial angular position of the shutter.

4,249,266

FIBER OPTICS COMMUNICATION SYSTEM

Masami Nakamori, Sepulveda, Calif., assignor to Perkins Research & Mfg. Co., Inc., Canoga Park, Calif.

Filed Nov. 6, 1979, Ser. No. 91,721
Int. Cl.[3] H04B 9/00
U.S. Cl. 455—608 11 Claims



1. A fiber optics data transceiver for both transmitting and receiving either asynchronous or synchronous data through a fiber optics data communication cable, said transceiver being connected to one end of said cable and communicating with an identical transceiver at the other end of said cable and comprising:

(a) transmitter means for converting digital data from a data source connected to said transmitter means to optical flux for said cable, said flux comprising:

(i) for asynchronous data, a train of positive-going pulses

when said data is at a logical ONE, and a train of negative-going pulses when said data is at a logical ZERO, said train of pulses being interspaced at a fixed time interval and being restarted at each transition of said data between said logical ONE and said logical ZERO; and

(ii) for synchronous data, a train of positive-going pulses when said data is at a logical ONE, and a train of negative-going pulses when said data is at a logical ZERO, said pulses in said train each corresponding to a transition of a clock waveform to which said data is synchronized;

(b) receiver means for converting said optical flux from said cable to digital data for a data sink connected to said receiver means, whereby,

(i) for flux generated from said asynchronous data, said receiver means reconstructs said data; and

(ii) for flux generated from said synchronous data, said receiver means reconstructs said data and said clock to which said data was synchronized; and

(c) means for indicating the operationality of the data communications system formed by said two transceivers and said cable.

DESIGN PATENTS

GRANTED FEB. 3, 1981

ERRATA

For CLASS	See PATENT NO.
D21-025	258,156
D21-082	258,157
D21-086	258,158
D21-101	258,159
D21-114	258,160
D21-120	258,161
D21-121	258,162
D21-122	258,163
D21-129	258,164
D21-132	258,165
D21-147	258,166
D21-157	258,167
D21-222	258,168
D21-227	258,169

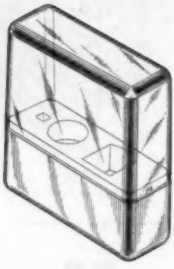
DESIGNS

FEBRUARY 3, 1981

258,095
BASEBALL GLOVE
William C. Lachemann, 208 Riverview La., Great Falls, Mont. 59401
Filed Jan. 9, 1979, Ser. No. 2,192
Term of patent 14 years
Int. Cl. D2—*06*
U.S. Cl. D2—361

258,096
ADJUSTABLE CRUTCH
Bent Barfod, Hojtoftevej 16, Risskov, Denmark (DK-8240)
Filed Jun. 13, 1978, Ser. No. 915,329
Term of patent 14 years
Int. Cl. D3—*03*
U.S. Cl. D3—8

258,097
HOLDER FOR DENTAL PLAQUE DETECTION SYSTEM
John Wistrand, New Canaan, Conn., assignor to Clairol Incorporated, New York, N.Y.
Filed Jun. 11, 1979, Ser. No. 47,962
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—39

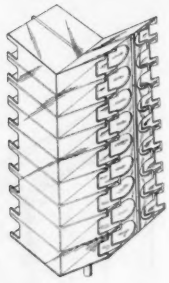


258,098
CONVERTIBLE SADDLE TOTE BAG
Sidney Norinsky, 40-22 44th St., Long Island City, N.Y. 11104
Filed Apr. 23, 1976, Ser. No. 679,818
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—71

258,099
EYEGLASS DISPLAY RACK

Robert P. Franklin, Lake Hopatcong, and John G. Dewees, Morristown, both of N.J., assignors to Trans-World Manufacturing Corp., Little Ferry, N.J.

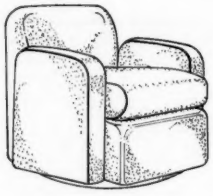
Filed Mar. 12, 1979, Ser. No. 19,779
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—24



258,100
ARMCHAIR

Dorothy L. Blowers, Los Angeles, Calif., assignor to Pacific Furniture Manufacturing Co., Compton, Calif.

Filed Jan. 18, 1979, Ser. No. 4,504
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—26



258,101
ARMCHAIR

John W. Caldwell, San Marino, Calif., assignor to Pacific Furniture Manufacturing Co., Compton, Calif.

Filed Jan. 18, 1979, Ser. No. 4,505
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—26

258,102
ARMCHAIR

Peter A. Rocchia, San Francisco, Calif., assignor to The Wicker Works, San Francisco, Calif.

Filed Feb. 21, 1979, Ser. No. 13,552
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—68

258,103
TABLE

Bertrand M. Baker, 109 N. Warbler La., Sarasota, Fla. 33577

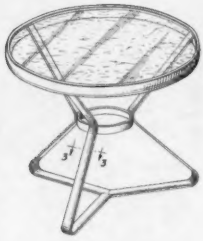
Filed Feb. 22, 1978, Ser. No. 880,308
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—146

258,104
TEA TABLE

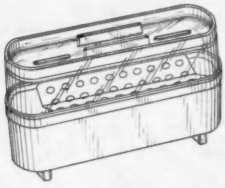
Bertrand M. Baker, 109 N. Warbler La., Sarasota, Fla. 33577

Filed Feb. 22, 1978, Ser. No. 880,312
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—146

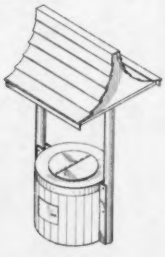
258,105
SIDE TABLE
Bertrand M. Baker, 109 N. Warbler La., Sarasota, Fla. 33577
Filed Feb. 22, 1978, Ser. No. 880,314
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—146



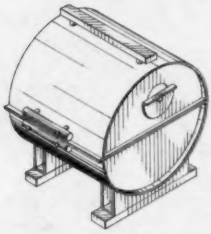
258,106
HOT DOG STEAMER
Joseph L. Vieceli, La Grange, Ill., assignor to Sumbeam Corporation, Chicago, Ill.
Filed Jan. 16, 1978, Ser. No. 869,551
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—94



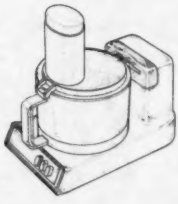
258,107
CANOPIED GRILL CONTAINER
George L. Stevenson, 509 S. 5th St., Clinton, Ind. 47842
Filed Oct. 23, 1978, Ser. No. 953,421
Term of patent 14 years
Int. Cl. D7—*02*; D11—*02*; D31—*00*
U.S. Cl. D7—107



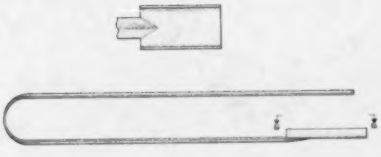
258,108
PORTABLE COOKING GRILL
Charles W. Cone, Lake Shore Manor Apartments #B-25, Lake Alfred, Fla. 33850
Filed Oct. 27, 1978, Ser. No. 955,383
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—110



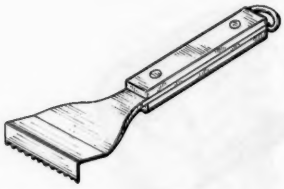
258,109
FOOD PROCESSOR
Noboru Fukumoto, and Shyusuke Inoue, both of Toyonaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan
Filed Apr. 4, 1978, Ser. No. 894,197
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—153



258,110
TONGS FOR CLEANING GUTTERS AND THE LIKE
Eugene Lamberth, 4244 Overlook Dr., Birmingham, Ala. 35222
Filed Nov. 30, 1978, Ser. No. 964,830
Term of patent 14 years
Int. Cl. D7—*05, 06*
U.S. Cl. D7—161

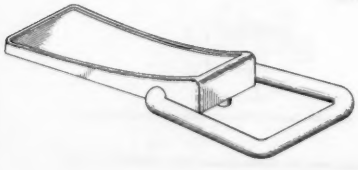


258,111
SCRAPER
Louis J. Christen, Jr., St. Louis, Mo., assignor to Christen Incorporated, St. Louis, Mo.
Filed Mar. 9, 1978, Ser. No. 885,089
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—184

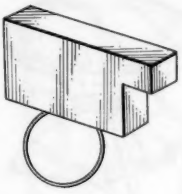


258,112
PLUG CUTTER
Gregory G. Klapp, 12215 Royal Valley Dr., St. Louis, Mo. 63141
Filed Oct. 26, 1978, Ser. No. 954,989
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D8—7

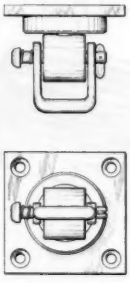
258,113
COMBINED HANDLE STUD AND RING
Sol Koffler, Providence, R.I., assignor to American Tourister, Inc., Warren, R.I.
Filed Aug. 24, 1978, Ser. No. 936,623
Term of patent 14 years
Int. Cl. D8—*06, 09*
U.S. Cl. D8—301



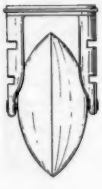
258,114
DEVICE FOR MAINTAINING DELIVERY OF GASOLINE PUMP NOZZLE
Morris Maynor, Jr., P.O. Box 368, Atlanta, Tex. 75551
Filed Oct. 19, 1977, Ser. No. 843,646
Term of patent 14 years
Int. Cl. D8—*08;* D15—*02;* D23—*01*
U.S. Cl. D8—349



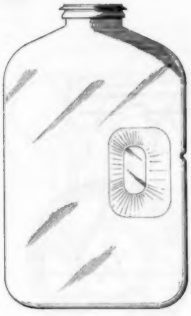
258,115
SWIVEL MOUNT FOR PUNCHING BAGS
Ronald H. Piatek, 707 Benefit St., Pawtucket, R.I. 02861
Filed Nov. 6, 1978, Ser. No. 958,426
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—373



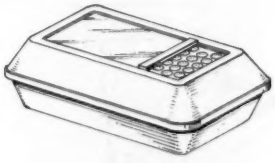
258,116
CASTER FOR AMPHIBIOUS USE
Cowles Andrus, Jr., 280 Union St., Hackensack, N.J. 07601
Filed Oct. 23, 1978, Ser. No. 953,990
Term of patent 7 years
Int. Cl. D8—*08, 09*
U.S. Cl. D8—375



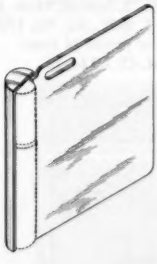
258,117
BOTTLE
Joseph E. Bashour, R.R. #3, Glynwood Rd., Wapakoneta, Ohio 45895
Filed Sep. 9, 1977, Ser. No. 831,946
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—403



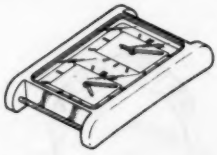
258,118
DENTAL MATERIAL DISPENSER
Don D. Porteous, 2794 Moraga Dr., Los Angeles, Calif. 90024
Filed Mar. 16, 1978, Ser. No. 887,462
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—348



258,119
DISPLAY CARD
Doris du Cret, New York, N.Y., assignor to Bristol-Myers Company, New York, N.Y.
Filed Sep. 13, 1978, Ser. No. 941,892
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—457



258,120
WRIST WATCH
Keizo Muramatsu, 2-30-9, Hatsudai, Shibuya-ku, Tokyo, Japan
Filed Dec. 8, 1978, Ser. No. 967,996
Claims priority, application Japan, Sep. 19, 1978, 53-39737
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—39



258,121
CALIPER
Evelyna C. Dyson, New York, N.Y., assignor to Revlon, Inc., New York, N.Y.
Filed Apr. 6, 1978, Ser. No. 894,231
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—73

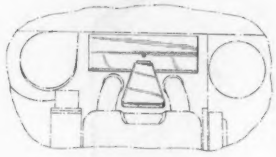
258,122
POSTAL SCALE
Hans J. Sinn, Fairfield, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.
Filed Apr. 23, 1979, Ser. No. 32,060
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—91

258,123
RING
Martin Gruber, 900 Euclid Ave., #311, Santa Monica, Calif. 90403
Filed Jun. 25, 1979, Ser. No. 51,798
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—34

258,124
PENDANT
Richard K. Raines, Jr., 124A Fauber Rd., East Peoria, Ill. 61611
Filed Aug. 11, 1978, Ser. No. 932,869
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—85

258,125
FOOTBALL TROPHY
Kenneth Bailey, P.O. Box 1076, Morgantown, W. Va. 26505
Filed Feb. 16, 1979, Ser. No. 12,830
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—157

258,126
SIDE SHIELD FOR MOTORCYCLE
Sherman E. Taylor, 3307 N. MacArthur, Oklahoma City, Okla. 73122
Filed May 11, 1978, Ser. No. 905,106
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—114

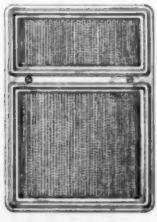


258,127
MOTORCYCLE FAIRING
Eitaro Kamata, Shimbashi, Japan, assignor to Shoei Safety Helmet Corporation, Los Angeles, Calif.
Filed Jul. 12, 1979, Ser. No. 56,953
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—182

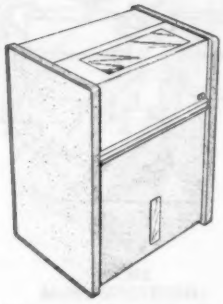
258,128
AUTOMOBILE RUNNING BOARD
Dennis O. Baker, R.R. No. 2, Sturgis, Mich. 49091
Filed Mar. 5, 1979, Ser. No. 17,605
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—203

258,129
WHEEL FOR MOTORCYCLE
Tatsuo Horikoshi, Tokyo, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Japan
Filed Oct. 11, 1979, Ser. No. 84,056
Claims priority, application Japan, Apr. 14, 1979, 54-15194
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—205

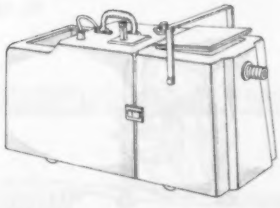
258,130
LOUDSPEAKER HOUSING ASSEMBLY
Glenn F. Doherty, Newburyport, and Gregory Fossella, Boston, both of Mass., assignors to Epicure Products, Inc., Newburyport, Mass.
Filed Jun. 19, 1978, Ser. No. 916,607
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—33



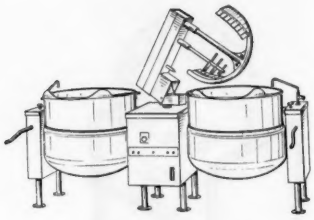
258,131
TELEPRINTER CABINET
Donald M. Genaro, Haworth, N.J., and Gordon Sylvester, Jamaica, N.Y., assignors to Teletype Corporation, Skokie, Ill.
Filed Jul. 3, 1978, Ser. No. 908,411
Term of patent 14 years
Int. Cl. D14—*03*; D6—*04*
U.S. Cl. D14—93



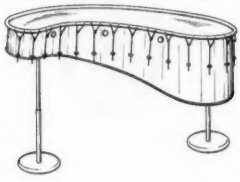
258,132
CARPET CLEANING MACHINE
Michael L. Levy, Luton, England, assignor to Trewax Company
Filed Oct. 24, 1978, Ser. No. 954,236
Claims priority, application United Kingdom, Apr. 25, 1978, 948328/78
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D15—52



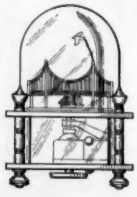
258,133
TWIN KETTLE AND SUPPORT THEREFOR
William M. Bardeau, 158 Norfinch Dr., Downsview, Ontario, Canada (M3N 1Y1)
Filed Dec. 18, 1978, Ser. No. 970,747
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D15—98



258,134
MULTITONE DRUM
G. Paul Widener, 5910 N. San Bernardo, #165, Laredo, Tex. 78041
Filed May 10, 1979, Ser. No. 37,901
Term of patent 14 years
Int. Cl. D17—*04*
U.S. Cl. D17—22

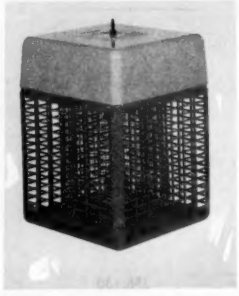


258,135
MUSIC BOX
Chong T. Ahn, 923 Fulton Ave., San Leandro, Calif. 94577
Filed Mar. 13, 1978, Ser. No. 885,788
Term of patent 14 years
Int. Cl. D17—*05*
U.S. Cl. D17—24



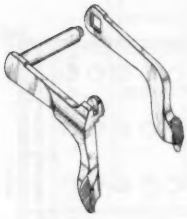
258,136
SLINGSHOT
William A. Magoon, 2330 E. Del Mar Blvd., No. 314, Pasadena, Calif. 91107
Filed Aug. 7, 1978, Ser. No. 931,833
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—4

258,137
INSECT TRAP
James B. Brown, Long Grove, Ill., and Dale Garrison, Twin Lakes, Wis., assignors to Beatrice Foods Co., Bristol, Wis.
Filed Nov. 24, 1978, Ser. No. 963,506
Term of patent 14 years
Int. Cl. D22—*06*
U.S. Cl. D22—19

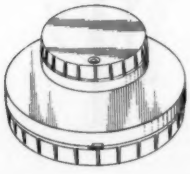


258,138
CLIP
Alexander C. Wood, Howick, Auckland, New Zealand
Filed Dec. 26, 1978, Ser. No. 973,550
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—22

258,139
RIGHT AND LEFT-HAND PISTOL SAFETY LOCK SET
Austin F. Behlert, 33 Herning Ave., Cranford, N.J. 07016
Filed Jun. 5, 1978, Ser. No. 912,424
Term of patent 14 years
Int. Cl. D22—*99, 01*
U.S. Cl. D22—99

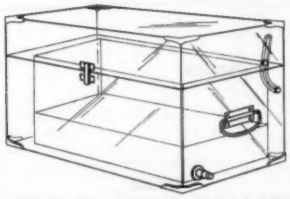


258,140
SPRINKLER CONTROLLER
Oded E. Sturman, and Benjamin Grill, both of Northridge, Calif., assignors to Hydronic Systems, Inc., Woodland Hills, Calif.
Filed Jul. 25, 1978, Ser. No. 928,007
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—38

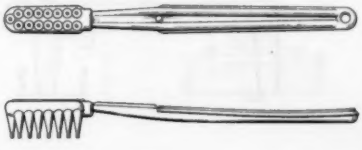


258,141
SOLAR WATER HEATER
Roland W. Robbins, Jr., Ridgecrest, Calif., assignor to SAV Solar Systems, Inc., Gardena, Calif.
Filed Mar. 22, 1979, Ser. No. 22,694
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—86

258,142
EMERGENCY PORTABLE INCUBATOR
Donald B. Cleveland, 2448 Centerline Industrial Dr., Maryland Heights, Mo. 63043
Filed Jun. 23, 1978, Ser. No. 918,666
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—9



258,143
GUM MASSAGING INSTRUMENT
Kenneth E. Flick, 5600 N. Hamline Ave., St. Paul, Minn. 55112
Filed Jun. 19, 1978, Ser. No. 916,722
Term of patent 14 years
Int. Cl. D24—*02*; D04—*02*
U.S. Cl. D24—10



258,144

OPTICAL CUVETTE INSERT FOR USE WITH DIFFERENTIAL SPECTROFLUOROMETER AND ABSORPTION METER

Eli A. Kallet, New York; Samuel Cravitt, Hartsdale, and Leonard R. Caputo, Yonkers, all of N.Y., assignors to Farrand Optical Co., Inc., Valhalla, N.Y.

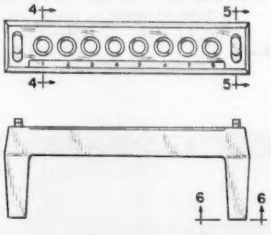
Filed Nov. 11, 1977, Ser. No. 850,568
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—17

258,145

STACKABLE LABORATORY RACK OR THE LIKE

Robert S. Potts, Sherborn, Mass., assignor to Corning Glass Works

Filed Mar. 23, 1978, Ser. No. 889,607
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—32

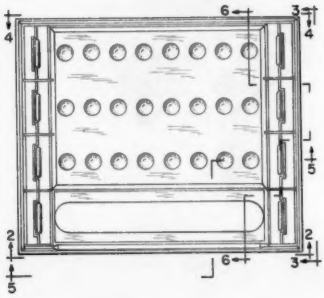


258,146

TRAY STRUCTURE OR THE LIKE FOR USE IN CONJUNCTION WITH A LABORATORY RACK

Robert S. Potts, Sherborn, Mass., assignor to Corning Glass Works

Filed Mar. 23, 1978, Ser. No. 889,608
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—32



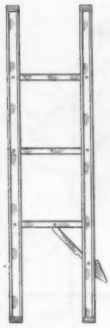
258,147

HIGH PRESSURE SOXHLET EXTRACTOR

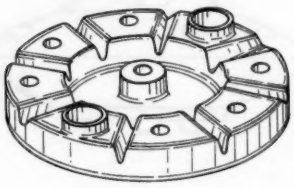
Walter G. Jennings, Davis; Robert H. Wohleb, Orangevale, and Norman W. Wohlers, Davis, all of Calif., assignors to J & W Scientific, Incorporated, Orangevale, Calif.

Filed Jul. 31, 1978, Ser. No. 929,452
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—56

258,148
FOLDABLE LADDER
Gilbert Loix, Chaussee Brunehault 22, 4462 Wihogne, Belgium
Filed Mar. 24, 1977, Ser. No. 781,070
Claims priority, application Belgium, Sep. 29, 1976, 214200
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D25—64

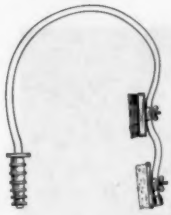


258,149
COMBINED CIGAR AND CIGARETTE HOLDER, EXTINGUISHER AND ASH TRAY
George Bobbish, 3006 Houston Dr., Franklin Park, Ill. 60131
Filed Nov. 17, 1978, Ser. No. 961,668
Term of patent 14 years
Int. Cl. D27—*03*
U.S. Cl. D27—27

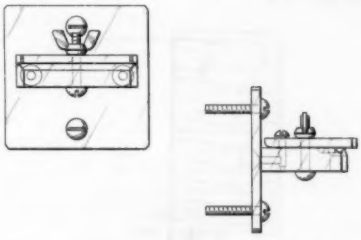


258,150
HAIRSPRAY MASK
William N. Elliott, 10224 Plantation Dr., SE., Huntsville, Ala. 35803
Filed Oct. 13, 1978, Ser. No. 951,284
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—9

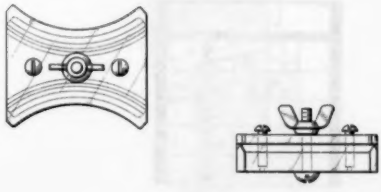
258,151
BACK SCRUBBER
Francis Y. Nakagawa, 17328 Glenmore, Detroit, Mich. 48240
Filed Feb. 27, 1978, Ser. No. 881,835
Term of patent 14 years
Int. Cl. D28—*03*; D4—*02*; D7—*05*
U.S. Cl. D28—63



258,152
HOLDER FOR A PET FOOD BOWL
Tony Robert, 5701 Southwest Freeway, Houston, Tex. 77057
Filed Jan. 11, 1979, Ser. No. 2,795
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—13

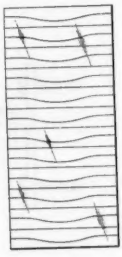


258,153
COUPLER FOR PET FOOD BOWLS
Tony Robert, 5701 Southwest Freeway, Houston, Tex. 77057
Filed Jan. 11, 1979, Ser. No. 2,796
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—13

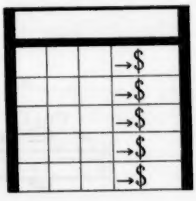


258,154
EMBOSSED BATHROOM TISSUE SHEET
Frank Elchook, Jr., Whitehall, Pa., and Galyn A. Schulz, Appleton, Wis., assignors to American Can Company, Greenwich, Conn.
Filed May 16, 1979, Ser. No. 39,457
Term of patent 14 years
Int. Cl. D5—*06*
U.S. Cl. D59—2 C

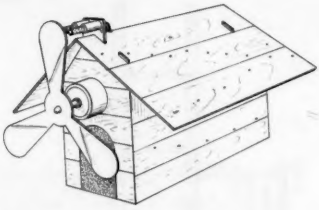
258,155
SHEET OF HAIR REMOVING STRIPS
Larry Mathews, New York, N.Y., assignor to Alleghany Pharmacal Corp., New York, N.Y.
Filed Mar. 1, 1979, Ser. No. 16,538
Term of patent 14 years
Int. Cl. D5—*06*
U.S. Cl. D59—2 R



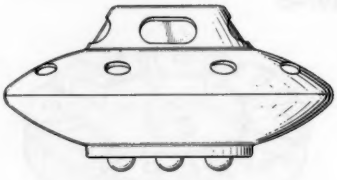
258,156
BINGO GAME CARD
Richard Jeffries, 3042 Masters Pl., San Diego, Calif. 92123
Filed Aug. 16, 1978, Ser. No. 934,179
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—25



258,157
SIMULATIVE AERIAL TOY
Robert R. Schoch, 517 Otteray Dr., High Point, N.C. 27260
Filed Jun. 26, 1978, Ser. No. 919,368
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—82

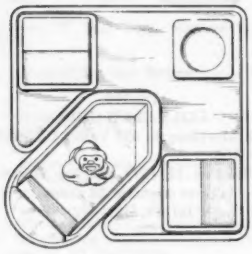


258,158
FLYING SAUCER TOY
Bernard F. Bunke, 1700 Pennsylvania Ave., Colton, Calif. 92324
Filed Apr. 3, 1978, Ser. No. 893,167
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—86

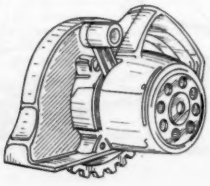


258,159
HOOP ROLLER
Maurice O'Meara, R.R. 2, Charter Oak, Iowa 51439
Filed May 1, 1978, Ser. No. 901,742
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—101

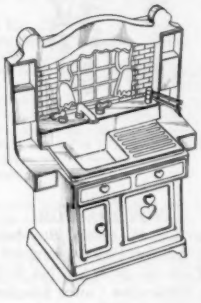
258,160
COMBINED TOY HARBOR, VILLAGE AND FIGURE THEREFOR
D. Michael Williams, Morin Heights, Canada, and Danny E. Simpson, Baltimore, Md., assignors to Johnson & Johnson, New Brunswick, N.J.
Filed Mar. 8, 1978, Ser. No. 884,772
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—114



258,161
TOY CIRCULAR SAW
Ronald R. Klawitter, Gasconade County, Mo., assignor to Steven Manufacturing Company
Filed Apr. 17, 1978, Ser. No. 896,817
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—120

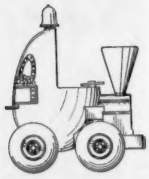


258,162
TOY SINK
Henry Orenstein; George Decker, both of Union, N.J.; Floyd E. Schlau, East Greenwich, R.I.; Maureen Patterson, Brighton, Mass.; Peter M. Santaw, Batavia, Ohio, and Steven R. D'Aguanno, Greenville, R.I., assignors to Hasbro Industries, Inc., Pawtucket, R.I.
Filed May 8, 1978, Ser. No. 905,098
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—121

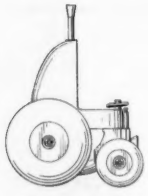


258,163
TOY STOVE
Henry Orenstein; George Decker, both of Union, N.J.; Floyd E. Schlau, East Greenwich, R.I.; Maureen Patterson, Brighton, Mass.; Peter M. Santaw, Batavia, Ohio, and Steven R. D'Aguanno, Greenville, R.I., assignors to Hasbro Industries, Inc., Pawtucket, R.I.
Filed May 8, 1978, Ser. No. 905,097
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—122

258,164
TOY LOCOMOTIVE
Patrick T. A. Burdock, St. Peters, Broadstairs, England, assignor to Rovex Limited, London, England
Filed Jul. 12, 1978, Ser. No. 923,920
Claims priority, application United Kingdom, Jan. 13, 1978, 982950/78
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—129

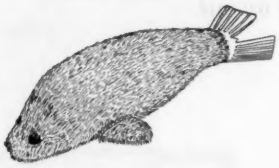


258,165
TOY TRACTOR
Patrick T. A. Burdock, St. Peters, Broadstairs, England, assignor to Rovex Limited, London, England
Filed Jul. 11, 1978, Ser. No. 923,738
Claims priority, application United Kingdom, Jan. 13, 1978, 984043/78
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—132



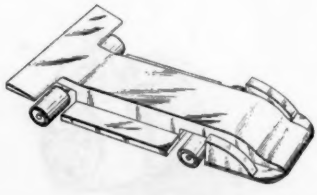
258,166
TOY WATER GUN
Francis M. L. Barthropp, West Vancouver, Canada, assignor to Barton of Canada Ltd., Burnaby, Canada
Filed Jun. 5, 1978, Ser. No. 912,572
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—147

258,167
STUFFED ANIMAL
Larry G. Bartch, 22937 St. Andrews St., Langley, British Columbia, Canada
Filed May 14, 1979, Ser. No. 38,553
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—157



258,168
GOLF CLUB GRIP
Alexander S. O. MacDougall, 495 Valley Club Rd., Santa Barbara, Calif. 93108
Filed Feb. 13, 1979, Ser. No. 11,918
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—222

258,169
SKATEBOARD
John R. Lukes, 17914 Gard Ave., Artesia, Calif. 90701
Filed Jun. 8, 1978, Ser. No. 913,741
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—227



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TO WHOM

PATENTS WERE ISSUED ON THE 3RD DAY OF FEBRUARY, 1981

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A-DEC, Inc.: *See*—
Lewis, John W., 4,248,589, Cl. 433-80.000.

A. P. Green Refractories Co.: *See*—
Dunlap, David R., 4,248,023, Cl. 52-506.000.

A/S Kongsberg Vapenfabrikk: *See*—
Sjotun, Kyrre; and Rognmo, Tore, 4,248,153, Cl. 102-208.000.

AB Bahco Verktyg: *See*—
Jansson, Conny; Erlandsson, Lars; and Appelkvist, Rolf, 4,247,983, Cl. 30-124.000.

Abbott Laboratories: *See*—
Dren, Anthony T.; and Bopp, Barbara A., 4,248,874, Cl. 424-256.000.

Abcor, Inc.: *See*—
Jakabhazy, Stephen Z.; and Zeman, Leos J., 4,248,913, Cl. 427-244.000.

Abe, Noboru: *See*—
Kobashi, Toshiyuki; Ozaki, Masahiko; and Abe, Noboru, 4,248,812, Cl. 264-51.000.

Abe, Youzou: *See*—
Kojimoto, Susumu; Ogawa, Tadatoshi; and Abe, Youzou, 4,248,651, Cl. 156-198.000.

Aberle, Gary F.; Balm, Gerald J.; Berstis, Viktors; Gregg, Leon E.; Hu, Kuang-Chi; Ranweiler, James G.; Richardson, William C.; Schardt, Terry L.; and Watson, Charles T., to International Business Machines Corporation. Object access serialization apparatus for a data processing system. 4,249,241, Cl. 364-200.000.

ACF Industries, Incorporated: *See*—
Carlson, Edwin S., 4,248,261, Cl. 137-590.000.
Carney, John L., Jr.; and Krug, John A. K., Jr., 4,248,160, Cl. 105-377.000.
Dugge, Richard H., 4,248,552, Cl. 406-129.000.
Zimmerman, Jack A., 4,248,551, Cl. 406-129.000.

Acher, Jacques: *See*—
Thominet, Michel; Bulteau, Gerard; Acher, Jacques; and Colligon, Claude, 4,248,885, Cl. 424-274.000.

ACI Technical Centre Pty Ltd.: *See*—
Erskine, Clive A., 4,248,810, Cl. 264-43.000.
McCarthy, Bruce L.; and Dunn, Karl M., 4,248,356, Cl. 215-344.000.

Acieries du Manoir Pompey: *See*—
Pons, Fernand; and Thuillier, Jacques, 4,248,629, Cl. 75-122.000.

Acosta, William A. Filter. 4,248,714, Cl. 210-238.000.

Acro, Inc.: *See*—
Robinson, Mark L., 4,247,975, Cl. 273-75.000.

Adair, William A.; and Johnson, Lyle A., to Teledyne Industries, Inc. Adjustable locking mechanism for tilting tables and the like. 4,248,161, Cl. 108-6.000.

Adams, Albert: *See*—
McGough, Eugene R.; and Adams, Albert, 4,248,601, Cl. 23-293.00R.

Adamski, Maximilian, Jr.; Talsma, Robert C.; Kosrow, Robert L.; and Bernstein, Benjamin T., to Union Special Corporation. Auxiliary feed mechanism for sewing machines. 4,248,170, Cl. 112-318.000.

Addison, Carl E.; and Comes, Rocky J. Control device for center pivot irrigation units. 4,248,260, Cl. 137-899.000.

Addy, Clarence A.; and Krizen, William C. Method and apparatus for sewing a cover upon a ball core. 4,248,165, Cl. 112-121.280.

Adlerwerke vorm. Heinrich Kleyer A.G.: *See*—
Stuiber, Walter; Gluck, Otto; and Schicketanz, Rudolf, 4,248,542, Cl. 400-298.000.

AECI Limited: *See*—
Healy, Nigel A., 4,248,644, Cl. 149-21.000.

AEI Semiconductors Limited: *See*—
Stacey, William F., 4,249,134, Cl. 329-205.00R.

Aero-Motive Manufacturing Company: *See*—
Evans, Maurice, 4,248,157, Cl. 105-154.000.

Aerospace Corporation, The: *See*—
Whittaker, Arthur G., 4,248,909, Cl. 427-162.000.

Aga, Toshio: *See*—
Sawayama, Takehiro; Ito, Ichizo; Aga, Toshio; and Ando, Tetsuo, 4,248,098, Cl. 73-861.240.

AGFA-Gevaert, A.G.: *See*—
Fernandez, Avelino; Glass, Josef; and Osegowitsch, Viktor, 4,248,515, Cl. 354-321.000.
Kolb, Gunter; and Morcher, Bernhard, 4,248,963, Cl. 430-501.000.
Krobel, Heinz; Bauer, Walter; and Schmidt, Manfred, 4,248,172, Cl. 116-200.000.
Stemme, Otto; Lermann, Peter; Schroeder, Rolf; and Karl, Horst, 4,248,511, Cl. 354-173.000.

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Laurenz, Frank R., 4,248,406, Cl. 254-274.000.

Aichi Steel Works, Limited: *See*—
Hasegawa, Yoshimichi; and Furuta, Osamu, 4,248,072, Cl. 72-8.000.

Aiken, John E.; Didycz, William J.; and Kerkentzes, Stanley J., to United States Steel Corporation. Waste gas purification reactor including packing holder and catalyst leveler support. 4,248,832, Cl. 422-177.000.

Aires, Ramon H.: *See*—
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Airwick Industries, Inc.: *See*—
Hennart, Claude; Martin, Georges; and Favreau, Jean, 4,249,029, Cl. 585-638.000.
Lee, Ping I.; and Kleiner, Eduard K., 4,248,380, Cl. 239-6.000.

Akatsu, Toshio; Kinoshita, Kazuto; and Fujiyoshi, Toshimitsu, to Hitachi, Ltd. Method of and system for measuring physical quantities of a rotating body at many points thereof. 4,248,095, Cl. 73-771.000.

Akers, Nancy E., to American Color & Chemical Corp. Process for preparing Acid Red 151. 4,248,777, Cl. 260-191.000.

Akimoto, Hiroshi: *See*—
Miyashita, Osamu; and Akimoto, Hiroshi, 4,248,870, Cl. 424-248.540.

Akin, Alfred A., Jr.; and Morris, Kendall B., to Bausch & Lomb Incorporated. Riflescope with data display in field of view. 4,248,496, Cl. 350-10.000.

Akiyama, Mistuo; and Kuru, Hiroshi, to Konishiroku Photo Industry Co., Ltd. Apparatus for controlling toner concentration in electrophotographic copying machines. 4,248,527, Cl. 355-14.00R.

Akiyama, Mistuo: *See*—
Shunichi, Abe; and Akiyama, Mistuo, 4,248,526, Cl. 355-14.00R.

Akkerman, Neil H., to Baker CAC, Inc. Fail safe locking mechanism for fluid operated valve actuator. 4,248,138, Cl. 92-27.000.

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Olsson, Torsten, 4,248,666, Cl. 176-19.0LD.

Aktiebolaget Leo: *See*—
Eriksoo, Edgar, 4,249,002, Cl. 544-38.000.
Eriksoo, Edgar, 4,249,003, Cl. 544-38.000.

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Muller, Hermann, 4,248,066, Cl. 68-43.000.

Akzona Incorporated: *See*—
McNeely, Gerald W., 4,248,597, Cl. 23-230.00R.

Albert, Max, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Method and means for preventing valve bridge cracks in cylinder heads of internal combustion engines. 4,248,191, Cl. 123-188.00S.

Albertinetti, Nedo P.; and Aldrich, Ralph E., to Itek Corporation. Piezoelectric wavefront modulator. 4,248,504, Cl. 350-360.000.

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Hattop, Peter H., 4,248,824, Cl. 264-171.000.

Aldrich, Ralph E.: *See*—
Albertinetti, Nedo P.; and Aldrich, Ralph E., 4,248,504, Cl. 350-360.000.

Alexander, David C.; and Meek, Vance R., to Fiber Industries, Inc. Cutter of elongated material. 4,248,114, Cl. 83-347.000.

Allain, Ronald J.; Braithwaite, David G.; and Maniscalco, Joseph P., to Nalco Chemical Company. Preparation of useful $MgCl_2$ solution with subsequent recovery of KCl from carnallite. 4,248,838, Cl. 423-162.000.

Allen, David; and Rowley, Robert J., to Modular Distribution Systems Limited. Lifting and lowering device for handling goods containers. 4,248,467, Cl. 294-67.00R.

Allen, Donavan J. Hydroponic bedding tray apparatus. 4,248,013, Cl. 47-59.000.

Allen, Malcolm H., Jr.; and Buzzell, Colby E., to General Electric Company. Mass rate of flow meter with improved fluid drive. 4,248,099, Cl. 73-861.360.

Allen, Reginald A., to TRW Inc. CCD Frequency divider circuit. 4,249,092, Cl. 307-221.00D.

Allen, Robert J.: *See*—
Lindstrom, Robert; Allen, Robert J.; and Juda, Walter, 4,248,682, Cl. 204-114.000.

Allenbaugh, Howard M., to M.A.G. Engineering Co. Lock with improved provisions for withstanding forces applied to bolt. 4,248,452, Cl. 292-167.000.

Allied Chemical Corporation: *See*—
Harrison, David M., 4,248,581, Cl. 425-464.000.

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Goldman, Holliday L., 4,248,404, Cl. 251-307.000.

Allsopp, Frederick: *See*—
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Matsuo, Katsuyuki, 4,249,055, Cl. 200-159.00B.
Sakamoto, Nozomu, 4,249,157, Cl. 338-176.000.
Tsutsui, Kotaroh, 4,249,053, Cl. 200-153.00J.

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Hanrot, Jean-Pascal; and Volpeliere, Jacky, 4,248,277, Cl. 141-93.000.

Alvarez, Mario Y.; and Mejia, Oscar. Dry cell battery. 4,248,945, Cl. 429-194.000.

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Datta, Pabitra; Westdale, Virgil W.; and Novotny, John, Jr., 4,248,954, Cl. 430-97.000.
Westdale, Virgil W.; and Kumins, Charles A., 4,248,950, Cl. 430-31.000.

Ambrogi, Raymond R., to Corning Glass Works. Encapsulation in glass and glass-ceramic materials. 4,248,925, Cl. 428-212.000.

Ambros, Peter: *See—*
Steigerwald, Wolf-Erhard; Ambros, Peter; and Gatzke, Erich, 4,248,921, Cl. 428-148.000.

American Color & Chemical Corp.: *See—*
Akers, Nancy E., 4,248,777, Cl. 260-191.000.

American Cyanamid Company: *See—*
Tucker, Robert J.; and Hoffman, Joseph A., 4,248,594, Cl. 8-583.000.
White, Willard C., 4,248,220, Cl. 128-206.190.

American Glass Research, Inc.: *See—*
Thompson, Leon E., 4,248,338, Cl. 198-379.000.

American Hoechst Corporation: *See—*
Jeffers, William; Seeley, Douglas; Faust, Raimund J.; and Liu, Shuchen, 4,248,959, Cl. 430-300.000.

American Home Products Corporation: *See—*
DeNeale, Richard J.; Guley, Paul C.; and Milosovich, George, 4,248,857, Cl. 424-21.000.
Guley, Paul C.; DeNeale, Richard J.; and Milosovich, George, 4,248,856, Cl. 424-21.000.
Guley, Paul C.; DeNeale, Richard J.; and Milosovich, George, 4,248,858, Cl. 424-21.000.
Jones, Robert C., 4,248,864, Cl. 424-177.000.

American Screen Printing Equipment Company: *See—*
Lala, Louis A., 4,248,150, Cl. 101-123.000.

AMP Incorporated: *See—*
Tominoi, Kunitada, 4,247,980, Cl. 29-742.000.

Ampex Corporation: *See—*
Perry, Vinson R.; and Ryan, John O., 4,249,202, Cl. 358-36.000.

AMSTED Industries Incorporated: *See—*
O'Neil, Gerald D., 4,248,318, Cl. 177-137.000.

Amundsen, Alan R.: *See—*
Hoeschele, James D.; and Amundsen, Alan R., 4,248,840, Cl. 423-302.000.

Andersen, Dennis H., to MTS Systems Corporation. Deep drawing press with blanking and draw pad pressure control. 4,248,545, Cl. 403-227.000.

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Anderson Power Products, Inc.: *See—*
Eby, Richard L.; and Wilson, Lester E., 4,248,942, Cl. 429-93.000.

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Andersson, Anders O.; and Purves, Robert B., to Boeing Company, The. Holographic resolution of complex sound fields. 4,248,093, Cl. 73-656.000.

Ando, Tetsuo: *See—*
Sawayama, Takehiro; Ito, Ichizo; Aga, Toshio; and Ando, Tetsuo, 4,248,098, Cl. 73-861.240.

Ando, Yujiro; and Ohara, Katsunobu, to Canon Kabushiki Kaisha; and Canon Kabushiki Kaisha. Method of image formation with a screen element and charging means. 4,248,951, Cl. 430-53.000.

Andoh, Shizuo: *See—*
Shinoda, Tsutae; Yoshikawa, Kazuo; and Andoh, Shizuo, 4,249,104, Cl. 313-188.000.

Andrews, Norwood H., to Norandy, Inc. Method and apparatus for comminuting material in a re-entrant circulating stream mill. 4,248,387, Cl. 241-5.000.

Angerame, Richard A.: *See—*
Darcy, Jon J.; Angerame, Richard A.; and Kramer, Aaron R., 4,248,051, Cl. 62-115.000.

Anthony's Manufacturing Company, Inc.: *See—*
Stromquist, Michael E.; and Heaney, James J., 4,248,015, Cl. 49-70.000.

Antoine, Robert: *See—*
Diamand, Felix; Bourrabier, Guy; and Antoine, Robert, 4,249,149, Cl. 333-223.000.

Aoi, Hajime; Tamura, Takashi; Koizumi, Makoto; Kunimi, Noboru; Enomoto, Minoru; and Hatanaka, Noriaki, to Hitachi, Ltd. Current drive circuit for an induction coil. 4,249,219, Cl. 360-46.000.

Aoshima, Masashi: *See—*
Maeda, Isamu; and Aoshima, Masashi, 4,248,987, Cl. 525-366.000.

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Appalachian Electronic Instruments, Inc.: *See—*
Wilson, Marlin V.; Nickell, Larry C.; and McCormack, John L., 4,248,272, Cl. 139-353.000.

Appelkvist, Rolf: *See—*
Jansson, Conny; Erlandsson, Lars; and Appelkvist, Rolf, 4,247,983, Cl. 30-124.000.

Arai, Fuminori: *See—*
Kitajima, Masao; Kondo, Asaji; and Arai, Fuminori, 4,248,829, Cl. 422-56.000.

Arai, Tadashi. Antibiotics saframycins A, B, C, D and E and process for producing the same. 4,248,863, Cl. 424-121.000.

Arakawa Kagaku Kogyo Kabushiki Kaisha: *See—*
Matsuo, Kohtaro; and Tsuchida, Seiichi, 4,248,770, Cl. 260-104.000.

Arakawa, Masao: *See—*
Baba, Tsuneo; Kaneko, Masakatsu; Shimizu, Bunji; and Arakawa, Masao, 4,248,999, Cl. 536-4.000.

ARCO Polymers, Inc.: *See—*
Bi, Le-Khac; and Milkovich, Ralph, 4,248,980, Cl. 525-271.000.
Bi, Le-Khac; and Milkovich, Ralph, 4,248,982, Cl. 525-271.000.
Bi, Le-Khac; Milkovich, Ralph; and Doak, Kenneth W., 4,248,983, Cl. 525-314.000.
Bi, Le-Khac; Milkovich, Ralph; and Doak, Kenneth W., 4,248,984, Cl. 525-314.000.
Milkovich, Ralph; Doak, Kenneth; and Bi, Le-Khac, 4,248,981, Cl. 525-271.000.

Arias, Henry: *See—*
Ferris, Michael J.; Meyer, Burton C.; Hicks, Alan A.; and Arias, Henry, 4,248,009, Cl. 46-202.000.

Armour, Frank K., to Interlake, Inc. Cast house emissions recycle system. 4,248,407, Cl. 266-156.000.

Armstrong Cork Company: *See—*
Herron, Vincent P.; and Shenk, Jay D., 4,248,647, Cl. 156-84.000.

Armstrong, W. Ted. Slopemobile vehicle. 4,248,446, Cl. 280-87.010.

Arnold, Bernhard; Kowitz, Friedrich; Kuhlmann, Dieter; Ott, Karl-Heinz; and Morbitzer, Leo, to Bayer Aktiengesellschaft. ABS-Polymers of high notched impact strength. 4,248,778, Cl. 260-23.70M.

Aro Corporation, The: *See—*
Brandenberg, Karl A., 4,248,267, Cl. 137-885.000.

Aron, Leonard. Self-supporting infant chair. 4,248,478, Cl. 297-174.000.

Arrowsmith, Charlotte A. Floating canopy. 4,248,255, Cl. 135-5.00R.

Art Cap Company, Inc.: *See—*
Gallin, Paul G., 4,247,958, Cl. 2-187.000.

Asahi Communications, Incorporated: *See—*
Shimamura, Juki, 4,248,011, Cl. 46-254.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Chono, Masazumi; Maeda, Kunio; and Saito, Kunio, 4,249,004, Cl. 544-192.000.
Tamura, Nobuhiro; Fukuoka, Yohei; Yamamatsu, Setsuo; Suzuki, Yoshio; Mitsui, Ryoichi; and Ibuki, Tadayuki, 4,249,019, Cl. 560-208.000.

ASARCO Incorporated: *See—*
Thomas, Charles L.; and Carapella, Sam C., 4,248,953, Cl. 430-88.000.

Asberg, Sture L., to SKF Nova AB. Rolling bearing. 4,248,487, Cl. 308-189.00R.

ASEA Aktiebolag: *See—*
Bergstrom, Jan; Bertilson, Hans; Brogardh, Torgny; and Persson, Anders, 4,249,076, Cl. 250-227.000.

Assenza, John S.; and Thomas, Joseph J., to Critikon, Inc. Catheter with variable flexural modulus and method of using same. 4,248,234, Cl. 128-348.000.

Astec Industries, Inc.: *See—*
Brock, James D., 4,248,359, Cl. 222-58.000.

Ataka, Saburo: *See—*
Maruyama, Eiichi; Ataka, Saburo; Inao, Kiyohisa; Imamura, Yoshinori; Tsukada, Toshihisa; Takasaki, Yukio; and Hirai, Tadaaki, 4,249,106, Cl. 313-365.000.

Ateliers de la Motobecane: *See—*
Jaulmes, Christian, 4,248,322, Cl. 180-287.000.

Ateliers Reunis S.A.: *See—*
Joseph, Raymond, 4,248,441, Cl. 280-33.99A.

Atkins, Ronald L.; Nielsen, Arnold T.; and Norris, William P., to United States of America, Navy. New method for preparing pentanitroaniline and triaminotrinitrobenzenes from trinitrotoluene. 4,248,798, Cl. 564-441.000.

Atkinson, Alan W.; Clucas, Richard H.; Lancaster, Robert A.; and Perkins, Allen M., to Turner & Newall Limited. Fibrous sheet materials. 4,248,664, Cl. 162-145.000.

Audiffred, Sidney J., Jr.; and Ohaver, David S., to Caterpillar Tractor Co. Control system to apply vehicle brakes during a transmission directional shift. 4,248,330, Cl. 192-4.00C.

Auger, Robert L.: *See—*
Purinton, Edwin C.; Auger, Robert L.; and Holzinger, Carl S., 4,249,167, Cl. 340-572.000.

Aurousseau, Michel: *See—*
Robba, Max F.; and Aurousseau, Michel, 4,249,014, Cl. 549-49.000.

Austin, John J., to Champion International Corporation. Combination package and sleeve support means. 4,248,901, Cl. 426-119.000.

Autoclave Engineers, Inc.: *See—*
Smith, Charles W., Jr.; and Zimmerman, Franz X., 4,249,032, Cl. 13-25.000.

Automatech Industries, Inc.: *See—*
Rovin, Herman; Opuszenski, Theodore; and Pellicano, Joseph, 4,248,414, Cl. 493-416.000.

Avedis Zildjian Company: *See—*
Zildjian, Robert, 4,248,129, Cl. 84-422.00R.

Aziende Colori Nazionali Affini Acna S.p.A.: *See—*
Papa, Sisto S.; and Ferrario, Renzo, 4,248,776, Cl. 260-173.000.

B. F. Goodrich Company, The: *See—*
Hewitt, Larry E.; and Popovich, David T., 4,248,432, Cl. 273-235.00R.
Kroenke, William J., 4,248,766, Cl. 260-45.75R.

Kroenke, William J., 4,248,767, Cl. 260-45.75R.
Baba, Takaaki; Kitani, Teruo; Nakazawa, Masao; Yoshino, Hirokazu; Fujita, Tatsuo; and Tsuboka, Eiichi, to Matsushita Electric Industrial Co., Ltd. Composite image display apparatus. 4,249,211, Cl. 358-183.000.
Baba, Tsuneo; Kaneko, Masakatsu; Shimizu, Bunji; and Arakawa, Masao, to Sankyo Company Limited. 5-Fluorouracil derivatives and process for preparing thereof. 4,248,999, Cl. 536-4.000.
Babcock Krauss-Maffei Industrieanlagen GmbH: *See*—
Quittkat, Wolfram G., 4,248,639, Cl. 106-100.000.
Bachle, Walter W., to General Signal Corporation. Lay-in lug with conduction pad. 4,248,490, Cl. 339-14.00R.
Bachner, Alfred; and Vogl, Herbert, to Siemens Aktiengesellschaft. Circuit arrangement for connecting at least two teleprinters to a common connection line. 4,248,319, Cl. 178-3.000.
Bader, Leonhard; Giessner, Frank; Pechinger, Ernst; Rombach, Friedrich B.; Ruprich, Wilhelm; Weber, Helmut; and Winter, Hermann, to NCR Corporation. Method of making ink jet print head. 4,248,823, Cl. 264-156.000.
Baigrie, Brian D.; Bailey, Joseph; Johnston, Linda G.; and Mijovic, Miroslav V., to Eastman Kodak Company. Photographic products and processes employing heterocyclic azo dye developer compounds. 4,248,956, Cl. 430-225.000.
Bailey, Joseph: *See*—
Baigrie, Brian D.; Bailey, Joseph; Johnston, Linda G.; and Mijovic, Miroslav V., 4,248,956, Cl. 430-225.000.
Bailey, Thomas D., to Reilly Tar & Chemical Corp. Processes for preparing 2-chloro-5-trifluoromethylpyridine. 4,249,009, Cl. 546-345.000.
Bair, Denzel H.: *See*—
Bell, Frank H.; and Bair, Denzel H., 4,248,084, Cl. 73-191.000.
Baizer, Manuel M.: *See*—
Goodin, Richard D.; Hallcher, Richard C.; and Baizer, Manuel M., 4,248,678, Cl. 204-59.00R.
Bakal, Abraham I.: *See*—
Mackay, Donald A. M.; Bakal, Abraham I.; and Stroz, John J., 4,248,894, Cl. 426-3.000.
Stroz, John J.; Bakal, Abraham I.; and Mackay, Donald A. M., 4,248,895, Cl. 426-3.000.
Baker CAC, Inc.: *See*—
Akkerman, Neil H., 4,248,138, Cl. 92-27.000.
Baker, Donal E.: *See*—
Shuey, Kenneth C.; Baker, Donal E.; and Doughman, Charles L., 4,249,223, Cl. 361-4.000.
Baker International Corporation: *See*—
Silberman, Raphael J.; Tilton, Frederick T.; Smith, Everett H.; and Wichkoski, Dennis A., 4,248,307, Cl. 166-315.000.
Baker, Philip G.; Bing, Herbert A.; and Seiden, Myron A., to Polaroid Corporation. Identification card camera system. 4,248,510, Cl. 354-109.000.
Baker, Robert L. Humate utilization techniques. 4,248,640, Cl. 106-103.000.
Baldwin, Jack E.: *See*—
Demain, Arnold L.; Konomi, Toshio; and Baldwin, Jack E., 4,248,966, Cl. 435-43.000.
Baldwin Piano & Organ Company: *See*—
Bunger, David A.; and Uetrecht, Dale M., 4,248,123, Cl. 84-1.260.
Balla, Thomas: *See*—
Mescam, Jean-Francois; and Balla, Thomas, 4,249,239, Cl. 364-200.000.
Balm, Gerald J.: *See*—
Aberle, Gary F.; Balm, Gerald J.; Berstis, Viktors; Gregg, Leon E.; Hu, Kuang-Chi; Ranweiler, James G.; Richardson, William C.; Schardt, Terry L.; and Watson, Charles T., 4,249,241, Cl. 364-200.000.
Balmuth, Edward S., to United States of America, Navy. Method of adding alloy additions in melting aluminum base alloys for ingot casting. 4,248,630, Cl. 75-135.000.
Balyoz, John; Chang, Chi S.; Fox, Barry C.; Palmieri, John A.; Ghafghaichi, Majid; Jen, Teh-Sen; and Mooney, Donald B., to International Business Machines Corporation. LSI Semiconductor device and fabrication thereof. 4,249,193, Cl. 357-40.000.
Banasiak, Dennis S., to Phillips Petroleum Company. Olefin disproportionation catalyst. 4,248,738, Cl. 252-431.00R.
Barber, Alvan W.; and James, Leslie M. L., to Universal Straticication Systems, Inc. Spark plug and adapter for lean mixture engine cylinders. 4,248,189, Cl. 123-169.0PA.
Barbour, Robert G. Anchor handling and securing assembly. 4,248,171, Cl. 114-210.000.
Barmore, Thomas C. Game target with tethered projectile. 4,248,435, Cl. 273-331.000.
Barnich, Richard G., to Xycom, Inc. Address system for bus interconnected computer system. 4,249,240, Cl. 364-200.000.
Barrett, Anne. Laundry cart with a plurality of nesting hampers. 4,248,442, Cl. 280-33.99T.
Barroero, Louis F.; and Dekas, Socrates. Refrigerator door structure. 4,248,489, Cl. 312-296.000.
Barron, Eugene R., to Du Pont de Nemours, E. I., and Company. Bulky yarn. 4,248,036, Cl. 57-227.000.
Barta, Gary S., to Tektronix, Inc. Electroluminescent cathode ray storage tube. 4,249,133, Cl. 328-123.000.
Bartoli, Francesco: *See*—
Marconi, Walter; Bartoli, Francesco; Gianna, Roberto; Morisi, Franco; and Spotorno, Giuseppina, 4,248,704, Cl. 210-632.000.
BASF Aktiengesellschaft: *See*—
Fuchs, Hugo; Brand, Uwe; and Horn, Peter, 4,248,782, Cl. 260-239.30A.
Henning, Georg; and Guenthert, Paul, 4,248,635, Cl. 106-22.000.
Horn, Peter; and Fuchs, Hugo, 4,248,781, Cl. 260-239.30A.
Sterzel, Hans-Josef; Schmidt, Franz; and Pirzer, Hans, 4,248,996, Cl. 528-272.000.
BASF Wyandotte Corporation: *See*—
Patil, Arvind S.; and Netherton, Lowell E., 4,248,765, Cl. 260-42.530.
Basov, Nikolai G.; Berezhnoi, Igor A.; Vekshin, Vyacheslav S.; Danilychev, Vladimir A.; Elatontsev, Albert I.; Ignatiev, Vladimir V.; Karyshev, Vitaly D.; and Togulev, Alexandr K. Aircraft take-off and landing system and method for using same. 4,249,158, Cl. 340-26.000.
Batcher, Alfred J., to Sun Electric Corporation. Vector display scope. 4,249,171, Cl. 340-722.000.
Batey, William; Mills, Alfred L.; and Williams, John A., to United Kingdom Atomic Energy Authority. Recovery of nuclear fuel material. 4,248,836, Cl. 423-4.000.
Batz, Hans-Georg; Horn, Jurgen; Stellner, Klaus; Maier, Josef; Nelboeck-Hochstetter, Michael; and Weimann, Gunter, to Boehringer Mannheim GmbH. Hydroxy-succinimide ester compounds. 4,248,786, Cl. 260-326.260.
Batzer, Hans; and Sinnreich, Joel, to Ciba-Geigy Corporation. Modified polymers. 4,249,000, Cl. 536-66.000.
Bauer, Steven E.: *See*—
Hein, Paul R.; Yang, Michael W.; Irvin, Robert A.; Bauer, Steven E.; and Orem, Roland L., 4,248,960, Cl. 430-306.000.
Bauer, Walter: *See*—
Krobel, Heinz; Bauer, Walter; and Schmidt, Manfred, 4,248,172, Cl. 116-200.000.
Bauer, Werner R.; and Candor, James T., to Robertshaw Controls Company. Differential piston type reversing valve construction, system utilizing the same and method of making. 4,248,058, Cl. 62-324.00A.
Bauermeister, Gerd D., to Gesellschaft fur Biotechnologische Forschung mbH. Electrode device. 4,248,712, Cl. 204-195.00P.
Baumbach, Bertram W., to Reliable Elcctric Company. Surge voltage arrester with fail-safe feature. 4,249,224, Cl. 361-124.000.
Bausch & Lomb Incorporated: *See*—
Akin, Alfred A., Jr.; and Morris, Kendall B., 4,248,496, Cl. 350-10.000.
Baxter Travenol Laboratories, Inc.: *See*—
Kopp, Clinton V., 4,248,648, Cl. 156-94.000.
Mittleman, Herbert, 4,248,401, Cl. 251-7.000.
Bayer Aktiengesellschaft: *See*—
Arnold, Bernhard; Kowitz, Friedrich; Kuhlmann, Dieter; Ott, Karl-Heinz; and Morbitzer, Leo, 4,248,778, Cl. 260-23.70M.
Bossert, Friedrich; Franckowiak, Gerhard; Heise, Arend; Kazda, Stanislav; Meyer, Horst; Stoepel, Kurt; Towart, Robertson; and Wehinger, Egbert, 4,248,873, Cl. 424-256.000.
de Cleur, Eckhard; Dhein, Rolf; Rudolph, Hans; Kreuder, Hans J.; Muller, Hanns P.; Schafer, Walter; Wagner, Kuno; and Findeisen, Kurt, 4,248,978, Cl. 525-124.000.
Fest, Christa; Hoffmann, Hellmut; Hammann, Ingeborg; and Stendel, Wilhelm, 4,248,866, Cl. 424-200.000.
Haas, Peter; Blahak, Johannes; Mormann, Werner; and Kapps, Manfred, 4,248,930, Cl. 428-315.000.
Harnisch, Horst, 4,249,010, Cl. 548-159.000.
Hugl, Herbert; and Wolfrum, Gerhard, 4,248,774, Cl. 260-165.000.
Konig, Eberhard; Pedain, Josef; and Koch, Hans-Joachim, 4,248,756, Cl. 260-31.20N.
Lunkenheimer, Winfried; and Brandes, Wilhelm, 4,248,886, Cl. 424-278.000.
Pedain, Josef; and Thoma, Wilhelm, 4,248,910, Cl. 427-208.400.
Raue, Roderich, 4,248,775, Cl. 260-154.000.
Schafer, Karl, 4,248,596, Cl. 8-127.600.
Scholl, Walter; and Nickel, Horst, 4,248,771, Cl. 260-146.00T.
Wandel, Martin; Engelhard, Helmut; Gutschik, Ernst; Reichardt, Manfred; and Christoph, Geert, 4,248,934, Cl. 428-374.000.
BBC Brown, Boveri & Company, Limited: *See*—
De Mesmaeker, Ivan, 4,249,124, Cl. 324-51.000.
Karlen, Urs; and Kirschner, Horst, 4,249,098, Cl. 310-183.000.
Beacham, William H., to 379235 Ontario Ltd. Heat reclaimer for a heat pump. 4,248,056, Cl. 62-238.00E.
Beacham, William H., to 379235 Ontario Ltd. Heat transfer control circuit for a heat pump. 4,248,292, Cl. 165-50.000.
Beall, James F.: *See*—
Woldy, Paul N.; Kaufman, Harold C.; Dach, Michael M.; and Beall, James F., 4,248,604, Cl. 48-197.00R.
Beaty, Robert C.; and Mansfield, Gerald R., to Corning Glass Works. Control system for a slide centrifuge. 4,248,174, Cl. 118-665.000.
Becher, Albert F.: *See*—
King, Paul V.; Becher, Albert F.; and Henderson, Wilmer P., 4,248,342, Cl. 206-3.000.
Bechtel, Jon H., to Robertshaw Controls Company. Flow sensor and defrost system including same. 4,248,052, Cl. 62-140.000.
Bechteler, Martin; and Krueger, Hans, to Siemens Aktiengesellschaft. Electro-optical liquid crystal display device. 4,248,502, Cl. 350-341.000.
Bednarski, Stanislaw H.: *See*—
Kleba, Ronald J.; and Bednarski, Stanislaw H., 4,249,088, Cl. 307-87.000.
Beecham Group Limited: *See*—
Buckle, Derek R.; and Smith, Harry, 4,248,879, Cl. 424-269.000.

Rogers, Norman H.; and O'Hanlon, Peter J., 4,248,887, Cl. 424-283.000.

Beede, Charles H.; Waldman, Harold L.; and Blumig, Theodore, to Johnson & Johnson. Method for making hydrophilic random interpolymer compositions. 4,248,685, Cl. 204-159.220.

Beggs, Donald; Kelley, Bruce G.; and Meissner, David C., to Midrex Corporation. Method and apparatus for reducing particulate iron oxide to molten iron with solid reductant and oxy-fuel burners. 4,248,408, Cl. 266-156.000.

Behrens, Robert N., to Deere & Company. Clutch-brake controls for a lawn and garden tractor. 4,248,331, Cl. 192-13.00R.

Beksha, Gabrieljus-Vitautas L.: *See*—
Vasiliev, Petr E.; Klimavichjus, Prantsishkus-Algirdas R.; Kondratiev, Alexandr V.; Matsjukyavichjus, Juozas J.; Beksha, Gabrieljus-Vitautas L.; and Kaminskas, Vitautas A., 4,249,100, Cl. 310-317.000.

Bekum Maschinenfabrik GmbH: *See*—
Hefke, Manfred; Roos, Uve-Volker; and Reuel, Hermann, 4,248,583, Cl. 425-541.000.

Belcher, John J., Jr.: *See*—
McGuire, Robert C.; and Belcher, John J., Jr., 4,248,611, Cl. 55-238.000.

Belding, John, to Envirotech Corporation. Dry coke quenching and pollution control. 4,248,671, Cl. 202-228.000.

Belford, Timothy J.: *See*—
Wagle, Uday D.; and Belford, Timothy J., 4,248,800, Cl. 564-464.000.

Bell, Frank H.; and Bair, Denzel H., to Thiokol Corporation. Bomb calorimeter. 4,248,084, Cl. 73-191.000.

Bell & Howell Company: *See*—
Erikson, Rolf B.; Zemke, Edward H.; and Guenther, Kenneth L., 4,249,187, Cl. 346-75.000.

Bell, Malcolm R.; and Oesterlin, Rudolf, to Sterling Drug Inc. Pyrrole-3-acetamides. 4,248,784, Cl. 260-326.200.

Bell, Oliver A., Jr.; Gilleland, Randall C.; and Chance, Davey J., to Colt Industries Operating Corp. Gap condition light indicator system for electrical discharge machining apparatus. 4,249,059, Cl. 219-69.00G.

Bell, Robert R., to Motorola, Inc. Citizens band transceiver frequency synthesizer with single offset and reference oscillator. 4,249,138, Cl. 331-1.00A.

Bell Telephone Laboratories, Incorporated: *See*—
Bonyhard, Peter I.; and Nelson, Terence J., 4,249,249, Cl. 365-36.000.
Cho, Alfred Y., 4,249,190, Cl. 357-22.000.
Fulton, Theodore A., 4,249,094, Cl. 307-277.000.
Haddon, Robert C.; Kaplan, Martin L.; and Wudl, Fred, 4,249,013, Cl. 549-35.000.
Lee, William C., 4,249,181, Cl. 343-100.0CS.
West, James E., 4,248,808, Cl. 264-22.000.

Bellinger, James E., to Florida Data Corporation. Printer arm. 4,248,540, Cl. 400-124.000.

Belrose, Floyd M.; and Green, Augustus H., Jr., to United States of America, Army. Electronic symbology generation for radar plan position indicator (PPI) displays using rotating coils. 4,249,175, Cl. 343-5.0EM.

Ben Clements & Sons, Inc.: *See*—
Choi, Gwang H., 4,248,462, Cl. 292-322.000.

Bendix Corporation, The: *See*—
Snyder, Gene L., 4,248,492, Cl. 339-89.00M.
Toelle, Alvin D., 4,248,196, Cl. 123-489.000.

Benedick, Edward H., to Regenerative Environmental Equipment Co., Inc. Anti-leak valve flushing system for thermal regeneration apparatus. 4,248,841, Cl. 423-210.000.

Bennett, Douglas W.: *See*—
Kaupisch, Kurt F.; Bennett, Douglas W.; and Katzen, Raphael, 4,248,842, Cl. 423-242.000.

Bentley, Donald J.; and Raible, Donald A., to Bentley Laboratories, Inc. Oxygenator. 4,248,828, Cl. 422-47.000.

Bentley Laboratories, Inc.: *See*—
Bentley, Donald J.; and Raible, Donald A., 4,248,828, Cl. 422-47.000.

Benz, Hermann: *See*—
Schuck, Ludwig; and Benz, Hermann, 4,248,341, Cl. 198-790.000.

Berezhnoi, Igor A.: *See*—
Basov, Nikolai G.; Berezhnoi, Igor A.; Vekshin, Vyacheslav S.; Danilychev, Vladimir A.; Elatontsev, Albert I.; Ignatiev, Vladimir V.; Karyshev, Vitaly D.; and Togulev, Alexandr K., 4,249,158, Cl. 340-26.000.

Berg, Nils R. F., to Tetra Pak International AB. Packaging container with a pouring spout. 4,248,351, Cl. 206-620.000.

Bergstrom, Jan; Bertilson, Hans; Brogardh, Torgny; and Persson, Anders, to ASEA Aktiebolag. Optical measuring device using optical fibers. 4,249,076, Cl. 250-227.000.

Berkebile, Lee E.: *See*—
Fischer, William H.; Cromer, Charles F.; Hess, Robert L.; and Berkebile, Lee E., 4,249,049, Cl. 200-144.00R.

Berkowitz, Sidney; Manganaro, James L.; and Juelke, Charles V., to FMC Corporation. Process for removing excess water from active chlorine compounds. 4,247,988, Cl. 34-1.000.

Berliner Bank AG: *See*—
Kutzki, Manfred, 4,249,036, Cl. 179-5.00R.

Bernal Rotary Systems, Inc.: *See*—
Bollinger, William C., 4,247,970, Cl. 29-2.000.

Bernhardt, Rainer: *See*—
Bockemuhl-Simon, Jurgen; and Bernhardt, Rainer, 4,248,530, Cl. 355-74.000.

Bernstein, Benjamin T.: *See*—
Adamski, Maximilian, Jr.; Talsma, Robert C.; Kosrow, Robert L.; and Bernstein, Benjamin T., 4,248,170, Cl. 112-318.000.

Berstis, Viktors: *See*—
Aberle, Gary F.; Balm, Gerald J.; Berstis, Viktors; Gregg, Leon E.; Hu, Kuang-Chi; Ranweiler, James G.; Richardson, William C.; Schardt, Terry L.; and Watson, Charles T., 4,249,241, Cl. 364-200.000.

Bertilson, Hans: *See*—
Bergstrom, Jan; Bertilson, Hans; Brogardh, Torgny; and Persson, Anders, 4,249,076, Cl. 250-227.000.

Bessho, Sadao: *See*—
Ikushima, Heizi; Igusa, Kazuo; and Bessho, Sadao, 4,248,867, Cl. 424-236.000.

Bessouat, Roger; and Marjollet, Jacques, to Stein Industrie. Vertical steam separator-superheater. 4,248,181, Cl. 122-483.000.

Bharucha, Kekhusroo R.; Schrenk, Heinrich M.; and Slemon, Clarke E., to Canada Packers Limited. Process for preparing ampicillin. 4,248,780, Cl. 260-239.100.

Bhongbhibhat, Wisnu; Boehringer, Andreas; Schmid, Hans-Dieter; Haussmann, Siegfried; and Ilic, Ivan, to Haussmann, Siegfried. Dynamoelectric machine with reduced armature reaction. 4,249,099, Cl. 310-218.000.

Bi, Le-Khac; and Milkovich, Ralph, to ARCO Polymers, Inc. Clear impact resistant thermoplastic star-block copolymers. 4,248,980, Cl. 525-271.000.

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Milkovich, Ralph; Doak, Kenneth; and Bi, Le-Khac, 4,248,981, Cl. 525-271.000.

Bickel, Hans: *See*—
Scartazzini, Riccardo; and Bickel, Hans, 4,248,868, Cl. 424-246.000.

Bickley, Robert H.; and Olivenbaum, James E., to Motorola, Inc. High power RF relay switch. 4,249,150, Cl. 333-262.000.

Bing, Herbert A.: *See*—
Baker, Philip G.; Bing, Herbert A.; and Seiden, Myron A., 4,248,510, Cl. 354-109.000.

Biochem International Inc.: *See*—
Ricciardelli, Robert H., 4,248,239, Cl. 128-635.000.

Birks, Aleck M.; Haluk, Michael I.; and Rothenberg, Edward M., to Canadian Industries Limited. Apparatus for coating thermoplastic film. 4,248,576, Cl. 425-68.000.

Birscheidt, Henri: *See*—
Weber, Heinrich; Dungs, Horst; Ferdinand, Fritz; Brasseur, Yves; and Birscheidt, Henri, 4,248,603, Cl. 44-10.00J.

Bitterly, Jack G. Solar electrical generator. 4,249,083, Cl. 290-1.00R.

Black Clawson Company, The: *See*—
Wallick, Scott A., 4,248,662, Cl. 162-19.000.

Black and Decker, Inc.: *See*—
Leukhardt, Jill L.; and Saar, David A., 4,249,117, Cl. 318-275.000.
Wagster, Robert P.; and Onken, Carl H., Jr., 4,248,411, Cl. 269-67.000.

Blackburn, James B.; and Randon, Jean L., to Kaiser Electro Refractaire France. Process for the manufacture of gate valves for closure devices having a pouring nozzle and similar objects. 4,248,815, Cl. 264-71.000.

Blahak, Johannes: *See*—
Haas, Peter; Blahak, Johannes; Mormann, Werner; and Kapps, Manfred, 4,248,930, Cl. 428-315.000.

Blank, Izhak; and Fertig, Joseph, to Hydrophilics International, Inc. Pharmaceutical base salts. 4,248,855, Cl. 424-19.000.

Blanpain, Guy; and Grandfils, Pierre, to Charbonnages de France. Thrust device using hydraulic jacks. 4,248,136, Cl. 91-305.000.

Blaschke, Kurt; and Roob, Josef, to Stahl-Und Apparatebau Hans Leffer GmbH. Pile extraction apparatus. 4,248,550, Cl. 405-232.000.

Blattner, Raymond J., to Dresser Industries, Inc. Adjusting torque wrench. 4,248,107, Cl. 81-483.000.

Blazon-Flexible Flyer, Inc.: *See*—
Hayes, Thomas J., 4,248,420, Cl. 272-126.000.

Bleakley, Robert D. Cranial tension reliever. 4,248,215, Cl. 128-60.000.

Bledsoe, James O., Jr.; and Cardenas, Carlos G., to SCM Corporation. Selective conversion of d-isolimonene to d-3-menthene. 4,249,028, Cl. 585-273.000.

Bleggi, Henry: *See*—
Pritchett, Wayne W.; and Bleggi, Henry, 4,249,080, Cl. 250-557.000.

Bleiman, Arnold M.; and Russell, Gordon A., to Suntech, Inc. Label stripping apparatus. 4,248,661, Cl. 156-584.000.

Block, Marion Margret Gesine Topfer nee, heir: *See*—
Papst, Gero; Ropke, Gunther; and Topfer, Hans J., deceased, 4,248,623, Cl. 75-35.000.

Blodgett, Carl N. Filling device for freezer bags. 4,248,278, Cl. 141-316.000.

Blomseth, Harold K. Bullet seating depth gauge. 4,248,132, Cl. 86-24.000.

Blumenthal, Jack L.; Burk, Maksymilian; and Richardson, Neal A., to TRW Inc. Process for the manufacture and use of high purity carbonaceous reductant from carbon monoxide-containing gas mixtures. 4,248,627, Cl. 75-42.000.

Blumig, Theodore: *See*—
Beede, Charles H.; Waldman, Harold L.; and Blumig, Theodore, 4,248,685, Cl. 204-159.220.

Blunck, Otto H. Process and apparatus for the determination of the contents of organically bound carbon in water containing organic substances and a high concentration of salts. 4,248,598, Cl. 23-230.00M.

Bobrov, Oleg I.: *See*—
Petukhov, Vadim D.; Gaun, Viktor A.; and Bobrov, Oleg I., 4,248,133, Cl. 91-20.000.

Bockemuehl, Johannes: *See*—
Bockemuhl-Simon, Jurgen; and Bernhardt, Rainer, 4,248,530, Cl. 355-74.000.

Bockemuhl-Simon, Jurgen; and Bernhardt, Rainer, to Bockemuehl, Johannes. Frame for making photocopies. 4,248,530, Cl. 355-74.000.

Bodart, Robert; and Werts, Jean P. A. R. J., to U.S. Philips Corporation. Arrangement for restituting selection signals. 4,249,254, Cl. 375-117.000.

Bodenseewerk, Perkin-Elmer & Co., GmbH: *See*—
Kolb, Bruno; Boege, Dietrich; Pospisil, Peter; and Riegger, Hubert, 4,248,355, Cl. 215-274.000.

Boege, Dietrich: *See*—
Kolb, Bruno; Boege, Dietrich; Pospisil, Peter; and Riegger, Hubert, 4,248,355, Cl. 215-274.000.

Boehringer, Andreas: *See*—
Bhongbhibhat, Wisnu; Boehringer, Andreas; Schmid, Hans-Dieter; Haussmann, Siegfried; and Ilic, Ivan, 4,249,099, Cl. 310-218.000.

Boehringer Mannheim GmbH: *See*—
Batz, Hans-Georg; Horn, Jurgen; Stellner, Klaus; Maier, Josef; Nelboeck-Hochstetter, Michael; and Weimann, Gunter, 4,248,786, Cl. 260-326.260.

Boeing Company, The: *See*—
Andersson, Anders O.; and Purves, Robert B., 4,248,093, Cl. 73-656.000.
Cole, James B., 4,248,395, Cl. 244-216.000.
Larsen, Hals N.; and Kamber, Peter W., 4,248,042, Cl. 60-243.000.

Bolen, Charles E.: *See*—
Marzocchi, Alfred; Roberts, Michael C.; and Bolen, Charles E., 4,248,936, Cl. 428-391.000.

Bolker, Henry I.: *See*—
Kubes, George J.; MacLeod, James M.; Fleming, Bruce I.; and Bolker, Henry I., 4,248,663, Cl. 162-72.000.

Bollinger, William C., to Bernal Rotary Systems, Inc. Apparatus for forming expanded metal such as battery grids. 4,247,970, Cl. 29-2.000.

Bonca, Aaron. Earth boring auger. 4,248,313, Cl. 175-239.000.

Bonner, Stanley V., to Foster Wheeler Energy Corporation. Internally grooved heat transfer conduit. 4,248,179, Cl. 122-235.00C.

Bonyhard, Peter I.; and Nelson, Terence J., to Bell Telephone Laboratories, Incorporated. Ion-implanted bubble memory. 4,249,249, Cl. 365-36.000.

Booth, Anthony R.; and Cartwright, Cyril A., to Warner-Lambert Company. Skin-flow control razor. 4,247,982, Cl. 30-41.000.

Bopp, Barbara A.: *See*—
Dren, Anthony T.; and Bopp, Barbara A., 4,248,874, Cl. 424-256.000.

Bopst, John H., III. Angular attachment for instantaneous sealing of cracks. 4,248,659, Cl. 156-574.000.

Borg-Warner Corporation: *See*—
Day, Arthur D., III; and Ginder, Harold B., 4,248,055, Cl. 62-196.00C.

Bory, Alain; and Pommier, Jean, to Rhone-Poulenc Textile. Spinneret assembly. 4,248,577, Cl. 425-131.500.

Bos-Knox, Ltd.: *See*—
Simpson, George R., 4,248,501, Cl. 350-266.000.

Bossert, Friedrich; Franckowiak, Gerhard; Heise, Arend; Kazda, Stanislav; Meyer, Horst; Stoepel, Kurt; Towart, Robertson; and Wehinger, Egbert, to Bayer Aktiengesellschaft. Nitro-substituted 1,4-dihydropyridines, processes for their production and their medicinal use. 4,248,873, Cl. 424-256.000.

Bosso, Joseph F.: *See*—
Buchwalter, Stephen L.; Bosso, Joseph F.; and Christenson, Roger M., 4,248,753, Cl. 260-29.2TN.

Boucher, August S.; and Haaker, Clarence R., to Engineered Products Security Corporation. Door boring jig system. 4,248,554, Cl. 408-97.000.

Bourgery, Guy R.; Lacour, Alain P.; Moinet, Gerard H.; Pourrias, Bernard M.; and Ruch, Anne-Marie P., to Delalande S.A. Substituted benzodioxane, benzodioxole and benzodioxepine compounds. 4,248,788, Cl. 260-340.300.

Bourrabier, Guy: *See*—
Diamand, Felix; Bourrabier, Guy; and Antoine, Robert, 4,249,149, Cl. 333-223.000.

Bovenkerk, Harold P.; and DeVries, Robert C., to General Electric Company. Supported diamond. 4,248,606, Cl. 51-307.000.

Bowers, Robert C. Protective cap for a magnetic recording tape cassette. 4,248,345, Cl. 206-387.000.

Boyd, William M., to RCA Corporation. Exciter having incidental phase correction compensation in consonance with output power level. 4,249,214, Cl. 358-186.000.

Boyle, William G., to Otis Engineering Corporation. TFL Caliper. 4,247,985, Cl. 33-178.00F.

Bozler, Carl O.; Chapman, Ralph L.; Fan, John C. C.; and McClelland, Robert W., to Massachusetts Institute of Technology. Method of forming electrical contact and antireflection layer on solar cells. 4,248,675, Cl. 204-38.00A.

Brad Ragan, Inc.: *See*—
Christman, Harold E., 4,248,287, Cl. 152-354.00R.

Braddick, Britt O., to Texas Iron Works, Inc. Method of and apparatus for positioning retrievable landing nipple in a well bore string. 4,248,300, Cl. 166-250.000.

Bradley, Charles D., Jr., to Pneumo Corporation. Spherical bearing assembly with stress relief. 4,248,486, Cl. 308-72.000.

Bradner, William T.; Bush, James A.; and Nettleton, Donald E., Jr., to Bristol-Myers Company. Antibiotic complex producing bacterial culture. 4,248,970, Cl. 435-253.000.

Braithwaite, David G.: *See*—
Allain, Ronald J.; Braithwaite, David G.; and Maniscalco, Joseph P., 4,248,838, Cl. 423-162.000.

Brand, Uwe: *See*—
Fuchs, Hugo; Brand, Uwe; and Horn, Peter, 4,248,782, Cl. 260-239.30A.

Brandenberg, Karl A., to Aro Corporation, The. Multiple element fluid logic controls. 4,248,267, Cl. 137-885.000.

Brandes, Wilhelm: *See*—
Lunkenheimer, Winfried; and Brandes, Wilhelm, 4,248,886, Cl. 424-278.000.

Brandon and Clark Electric Company, Inc.: *See*—
Werner, John W., 4,249,113, Cl. 318-39.000.

Brandt, Siegfried: *See*—
Gude, Fritz; and Brandt, Siegfried, 4,248,654, Cl. 156-331.000.

Brasseur, Yves: *See*—
Weber, Heinrich; Dungs, Horst; Ferdinand, Fritz; Brasseur, Yves; and Birscheidt, Henri, 4,248,603, Cl. 44-10.00J.

Brcic, Ivo; Burda, Valentine; and Rentsch, Ulrich W., to Scintrex Limited. Efficient simultaneous electromagnetic transmission or reception at different frequencies in electromagnetic mapping. 4,249,129, Cl. 324-335.000.

Brematex S.p.A: *See*—
Micheletti, Fabrizio, 4,248,065, Cl. 66-237.000.

Breslow, Jeffrey D.: *See*—
Jaworski, Eugene; and Breslow, Jeffrey D., 4,248,202, Cl. 124-16.000.

Bretz, Karl-Heinrich: *See*—
Derleth, Helmut; Walter, Ludwig; Bretz, Karl-Heinrich; and Kurs, Artur, 4,248,847, Cl. 423-329.000.

Briggs, C. Steven: *See*—
Watkins, Richard R.; Briggs, C. Steven; and Doyle, John M., Jr., 4,249,172, Cl. 340-726.000.

Briley, Patrick B., to Hybrid Energy Systems, Inc. Temperature conditioning system suitable for use with a solar energy collection and storage apparatus or a low temperature energy source. 4,248,049, Cl. 62-2.000.

Brisson, A. Glen, to Respiratory Care, Inc. Inhalation heater control. 4,248,217, Cl. 128-204.170.

Bristol-Myers Company: *See*—
Bradner, William T.; Bush, James A.; and Nettleton, Donald E., Jr., 4,248,970, Cl. 435-253.000.
Samour, Carlos M.; and Vida, Julius A., 4,249,005, Cl. 544-302.000.
Thomas, Ralph H., 4,248,227, Cl. 128-232.000.

British Broadcasting Corporation: *See*—
Storey, Richard, 4,249,209, Cl. 358-167.000.
Storey, Richard; and Drewery, John O., 4,249,210, Cl. 358-167.000.

British Hovercraft Corporation Limited: *See*—
Wheeler, Raymond L., 4,248,320, Cl. 180-128.000.

British Industrial Plastics, Limited: *See*—
Sreeves, John E., 4,248,757, Cl. 260-32.80N.

Brock, James D., to Astec Industries, Inc. Weigh-out system for collapsible surge bin. 4,248,359, Cl. 222-58.000.

Brodbeck, Joseph F.; and Kazusky, Raymond, Jr., to Rockwell International Corporation. Sliding table assembly - tilting arbor saws. 4,248,115, Cl. 83-435.100.

Brody, Samuel M. Random race winner selector device. 4,248,458, Cl. 283-1.00R.

Brogardh, Torgny: *See*—
Bergstrom, Jan; Bertilson, Hans; Brogardh, Torgny; and Persson, Anders, 4,249,076, Cl. 250-227.000.

Broger, Emil A., to Hoffmann-La Roche Inc. Process for manufacturing triphenylphosphine. 4,249,023, Cl. 568-17.000.

Brother Kogyo Kabushiki Kaisha: *See*—
Kamiya, Osamu, 4,248,166, Cl. 112-122.000.

Brown, Alfred L.: *See*—
Butler, Kim D.; Young, Ray A.; and Brown, Alfred L., 4,248,348, Cl. 206-447.000.

Brown, David C.; and Wilson, Jack, to University of Rochester. Laser systems using pentaphosphate active mediums. 4,249,141, Cl. 331-94.50F.

Brown International Corporation: *See*—
McKinney, James E., Jr., 4,248,142, Cl. 99-509.000.

Brown, Lee R.; Herrera, Jose L.; and Plumadore, John D., to James River Graphics Inc.; and SIE Incorporated. Electrographic recording apparatus and method. 4,248,521, Cl. 355-3.00R.

Brown, Norman D. Fence for enclosing impurities floating on water. 4,248,547, Cl. 405-72.000.

Brown, William J.; and Rowley, James R., to PPG Industries, Inc. Bow and spreader bar. 4,248,472, Cl. 296-36.000.

Brown & Williamson Tobacco Corp.: *See*—
Cogbill, Philip H., II, 4,248,253, Cl. 131-146.000.

Bruinsma, Anne H., to U.S. Philips Corporation. Color selection circuit for color television. 4,249,200, Cl. 358-22.000.

Bryant, Charles B. Thru-flow aquatic harvester. 4,248,033, Cl. 56-8.000.

Bryant, Herman G., Jr.; and Norman, Vello, to Liggett Group Inc. Tobacco composition. 4,248,251, Cl. 131-17.00R.

Buchroeder, Richard A., to Hodges, Marvin P. Aspheric projection lens system utilizing concave image. 4,249,205, Cl. 358-60.000.

Buchwalter, Stephen L.; Bosso, Joseph F.; and Christenson, Roger M., to PPG Industries, Inc. Michael adducts of polymeric materials useful in coating applications. 4,248,753, Cl. 260-29.2TN.

Buckle, Derek R.; and Smith, Harry, to Beecham Group Limited. Benzopyranotriazoles. 4,248,879, Cl. 424-269.000.

Budzich, Mieczyslaw; and Fitz, Forest G., Jr., to Nassau Recycle Corporation. Apparatus for collecting drippings from a wet load carried by a crane. 4,248,353, Cl. 212-128.000.

Budzynski, John V.; and James, Donald A., to Goettl Bros. Metal Products, Inc. Solar hot water heating system. 4,248,294, Cl. 165-104.00S.

Buel, G. Theodore. Convertible pack assembly. 4,248,367, Cl. 224-153.000.

Bugaut, Andree: *See*—
Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, 4,248,591, Cl. 132-7.000.

Bugnone, Aldo. Die stamping and scoring device, and process for the manufacture thereof. 4,248,117, Cl. 83-863.000.

Buhr, Gerhard: *See*—
Sander, Jurgen; Skaletz, Detlef; Buhr, Gerhard; and Lohaus, Gerhard, 4,248,957, Cl. 430-270.000.

Bui Hai, Nhu, to Thomson-CSF. Periscope arrangement with protection against parasitic radiation. 4,249,183, Cl. 343-781.00R.

Bulso, Joseph D., Jr.; and Lewers, William R., to Redicon Corporation. Triple action container drawing and redrawing method. 4,248,076, Cl. 72-349.000.

Bulteau, Gerard: *See*—
Thominet, Michel; Bulteau, Gerard; Acher, Jacques; and Colligon, Claude, 4,248,885, Cl. 424-274.000.

Bunes, Leonard A., to Dynapol. Anthraquinone colorants. 4,249,007, Cl. 546-58.000.

Bunger, David A.; and Uetrecht, Dale M., to Baldwin Piano & Organ Company. Electronic piano. 4,248,123, Cl. 84-1.260.

Burachinsky, Bohdan V.: *See*—
Civardi, Frank P.; Sova, Stanley G.; and Burachinsky, Bohdan V., 4,248,652, Cl. 156-219.000.

Burbank, Fred H. Apparatus for protecting and preventing theft of in-dashboard mounted radios and the like. 4,248,069, Cl. 70-160.000.

Burda, Valentine: *See*—
Brcic, Ivo; Burda, Valentine; and Rentsch, Ulrich W., 4,249,129, Cl. 324-335.000.

Burgess, James N. Locking cap for pipe openings. 4,248,271, Cl. 138-89.000.

Burk, Maksymilian: *See*—
Blumenthal, Jack L.; Burk, Maksymilian; and Richardson, Neal A., 4,248,627, Cl. 75-42.000.

Burnes, Donald A. Golfing aid. 4,248,431, Cl. 273-187.00R.

Burnham, Robert D.; and Scifres, Donald R., to Xerox Corporation. Enhancement of lowest order mode operation in nonplanar DH injection lasers. 4,249,142, Cl. 331-94.50H.

Buros, William B., to Micr-Shield Co. Method of correcting erroneously encoded optical character recognition encoding. 4,249,072, Cl. 235-491.000.

Burroughs Corporation: *See*—
Durney, David J.; and Lockhart, James A., Jr., 4,249,196, Cl. 357-74.000.
Lockhart, James A., Jr., 4,249,173, Cl. 340-731.000.

Burroughs, Robert C. Projection measuring scale. 4,247,986, Cl. 33-494.000.

Bush, James A.: *See*—
Bradner, William T.; Bush, James A.; and Nettleton, Donald E., Jr., 4,248,970, Cl. 435-253.000.

Butler, Andrew W.: *See*—
Hurst, Geoffrey J.; and Butler, Andrew W., 4,249,144, Cl. 333-81.00R.

Butler, Kim D.; Young, Ray A.; and Brown, Alfred L., to Goodyear Tire & Rubber Company, The. Package for compounding rubber and compounded rubber. 4,248,348, Cl. 206-447.000.

Butler, Walker, to Motorola, Inc. Apparatus for eliminating blind velocities in MTI radars. 4,249,178, Cl. 343-7.700.

Buzzell, Colby E., to General Electric Company. Mass rate of flow meter with improved magnetic circuit. 4,248,100, Cl. 73-861.360.

Buzzell, Colby E.: *See*—
Allen, Malcolm H., Jr.; and Buzzell, Colby E., 4,248,099, Cl. 73-861.360.

Byers, Warren J.: *See*—
Kleine, Richard A.; and Byers, Warren J., 4,248,025, Cl. 52-731.000.

Byrne, Joe L.: *See*—
Egli, Hans; Byrne, Joe L.; and Nancarrow, James H., 4,248,567, Cl. 415-53.00T.

Bytzek, Max: *See*—
Hammer, Klaus-Dieter; Gerigk, Gunter; and Bytzek, Max, 4,248,900, Cl. 426-105.000.

Caccamisi, Michael V. Apparatus for developing film. 4,248,513, Cl. 354-299.000.

California R & D Center: *See*—
Jones, Lawrence T.; Sims, Anson; Howden, Ashley G.; and Lee, Robert S., 4,248,006, Cl. 46-17.000.

Camco, Incorporated: *See*—
Pringle, Ronald E., 4,248,308, Cl. 166-322.000.

Cameron Iron Works, Inc.: *See*—
Czerewaty, Frank P., 4,248,549, Cl. 405-224.000.

Camp, Floyd E.; and Stana, Regis R., to Wyoming Mineral Corporation. Emulsion removal from acidic solution-solvent interfaces. 4,248,703, Cl. 210-676.000.

Campbell, Kenneth J., to United States of America, Navy. Radio frequency signals analyzer. 4,249,257, Cl. 455-115.000.

Canada Packers Limited: *See*—
Bharucha, Kekhusroo R.; Schrenk, Heinrich M.; and Slemon, Clarke E., 4,248,780, Cl. 260-239.100.

Canadian Industries Limited: *See*—
Birks, Aleck M.; Haluk, Michael I.; and Rothenberg, Edward M., 4,248,576, Cl. 425-68.000.
Linse, Vonne D.; and Pattee, Harry E., 4,248,373, Cl. 228-107.000.

Canadian Patents & Development Ltd.: *See*—
Zielinski, Zenon A.; and Zielinski, Czeslawa, 4,248,020, Cl. 52-185.000.

Candor, James T.: *See*—
Bauer, Werner R.; and Candor, James T., 4,248,058, Cl. 62-324.00A.

Canon Kabushiki Kaisha: *See*—
Ando, Yujiro; and Ohara, Katsunobu, 4,248,951, Cl. 430-53.000.
Ando, Yujiro; and Ohara, Katsunobu, 4,248,951, Cl. 430-53.000.
Minoura, Kazuo, 4,248,495, Cl. 350-6.300.
Sato, Tadashi; and Furuichi, Katsushi, 4,248,529, Cl. 355-41.000.
Takahashi, Toru, 4,248,524, Cl. 355-14.00E.

Capuano, Louis M.: *See*—
Mandel, Alan F.; Capuano, Louis M.; Otto, Paul R.; and Eichler, Kenneth M., 4,248,327, Cl. 187-29.00R.

Carapella, Sam C.: *See*—
Thomas, Charles L.; and Carapella, Sam C., 4,248,953, Cl. 430-88.000.

Carborundum Company, The: *See*—
Myles, Thomas A., 4,248,752, Cl. 260-29.10R.

Cardenas, Carlos G.: *See*—
Bledsoe, James O., Jr.; and Cardenas, Carlos G., 4,249,028, Cl. 585-273.000.

Cardinal Scale Manufacturing Company: *See*—
Rahav, Amir, 4,248,317, Cl. 177-134.000.

Carl Schenck AG: *See*—
Schuck, Ludwig; and Benz, Hermann, 4,248,341, Cl. 198-790 000.

Carl Still GmbH & Co. KG, Firma: *See*—
Lorenz, Kurt; and Dungs, Horst, 4,248,670, Cl. 202-99.000.
Weber, Heinrich; Dungs, Horst; Ferdinand, Fritz; Brasseur, Yves; and Birscheidt, Henri, 4,248,603, Cl. 44-10.00J.

Carl Zeiss Stiftung: *See*—
Muchel, Franz; Summerer, Gunther; and Stern, Ekkehard, 4,248,505, Cl. 351-7.000.

Carlin, William W.; Darlington, William B.; DuBois, Donald W.; and Woo, Roseanne M., to PPG Industries, Inc. Electrolytic process and apparatus. 4,248,680, Cl. 204-98.000.

Carlson, David H. J.; and Urban, Peter, to UOP Inc. Process for treating a sour petroleum distillate. 4,248,694, Cl. 208-206.000.

Carlson, Edwin S., to ACF Industries, Incorporated. Eduction pipe assembly having upper flexible member. 4,248,261, Cl. 137-590.000.

Carney, John L., Jr.; and Krug, John A. K., Jr., to ACF Industries, Incorporated. Railway hatch cover and strap latching assembly. 4,248,160, Cl. 105-377.000.

Carpenter, Keith H.: *See*—
Savage, Jack W.; and Carpenter, Keith H., 4,248,383, Cl. 239-284.00A.

Carper, William B. Snow scoop with wear strip along lip and method of attaching the wear strip in a blow molding process. 4,248,466, Cl. 294-54.000.

Carrington, John H.; and Rudolph, Herman, to Sirchie Finger Print Laboratories, Inc. Finger print powder dispensing apparatus. 4,248,543, Cl. 401-183.000.

Carruthers, Thomas R., to Fleming Fabrications Limited. Self priming devices for indirect domestic water heating systems. 4,248,378, Cl. 237-66.000.

Carter, Robert L.: *See*—
Cotter, Thomas N.; Carter, Robert L.; and Giuffrida, Sebastian J., 4,248,454, Cl. 280-668.000.

Cartwright, Cyril A.: *See*—
Booth, Anthony R.; and Cartwright, Cyril A., 4,247,982, Cl. 30-41.000.

Caruso, John T., to Moog Inc. Feedback mechanism for variable displacement hydraulic device having an electrohydraulic controller. 4,248,137, Cl. 91-375.00R.

Carver, Clem. Portable device for testing and/or temporarily correcting circuits in a vehicle electrical system. 4,249,125, Cl. 324-51.000.

Casamayor, Jorge, to Plaskolite, Inc. Plastic multiple track window with slideable and removeable panes, and elements thereof. 4,248,018, Cl. 49-504.000.

Cascade Pacific Lumber Company: *See*—
Friedberg, Marvin P., 4,248,418, Cl. 272-62.000.

Caspelherr, Heinz: *See*—
Jakobs, Willy; and Caspelherr, Heinz, 4,248,556, Cl. 409-131.000.

Casper, Raymond C. Cup holder. 4,248,397, Cl. 248-138.000.

Castano, John R.: *See*—
Mommessin, Pierre R.; Castano, John R.; Rankin, John G.; and Weiss, Mary L., 4,248,599, Cl. 23-230.0HC.

Caterpillar Tractor Co.: *See*—
Audiffred, Sidney J., Jr.; and Ohaver, David S., 4,248,330, Cl. 192-4.00C.
Hart, Cullen P., 4,248,447, Cl. 280-112.00R.

Haslett, Glenn M., 4,248,439, Cl. 277-84.000.
Spivey, William J., Jr., 4,248,134, Cl. 91-29.000.

Catrombon, George T.: *See*—
Deckenback, Carl M.; Catrombon, George T.; and Rowe, Lester A., 4,248,559, Cl. 409-307.000.

Caughey, Robert A., to Michigan Technological University, Board of Control of. Pallet having densified edge and method of making same. 4,248,163, Cl. 108-53.300.

Celanese Corporation: *See*—
Vanderspurt, Thomas H., 4,248,803, Cl. 568-477.000.

Centralna Laboratoria Po Physiko-Chimicheska Mechanika pri Ban: *See*—
Simeonov, Yordan T.; Cheshkov, Valeri M.; and Zahariev, Georgi Z., 4,248,760, Cl. 260-39.0SB.

Cerberus AG: *See*—
Muggli, Jurg, 4,249,168, Cl. 340-578.000.

CGR Medical Corporation: *See*—
Thomas, Eugene P., 4,249,079, Cl. 250-468.000.

Chafetz, Harry; and Lee, Gary D., to Texaco Inc. Quaternary ammonium salts and lubricating oil containing said salts as dispersants. 4,248,719, Cl. 252-34.000.

Cham, Edward J.; and Stefanick, Ronald M., to Westinghouse Electric Corp. Annunciator. 4,249,170, Cl. 340-646.000.

Champion International Corporation: *See*—
Austin, John J., 4,248,901, Cl. 426-119.000.
Rogers, Sandra K., 4,247,957, Cl. 2-12.000.

Chan, John K., to Union Carbide Corporation. Preparation of organic sulfone compounds. 4,248,795, Cl. 564-255.000.

Chance, Davey J.: *See*—
Bell, Oliver A., Jr.; Gilleland, Randall C.; and Chance, Davey J., 4,249,059, Cl. 219-69.00G.

Chandler Associates, Inc.: *See*—
States, John B., Sr., 4,248,733, Cl. 252-355.000.

Chang, Chi S.: *See*—
Balyoz, John; Chang, Chi S.; Fox, Barry C.; Palmieri, John A.; Ghafghaichi, Majid; Jen, Teh-Sen; and Mooney, Donald B., 4,249,193, Cl. 357-40.000.

Chapman, Charles C.; and Hann, Paul D., to Phillips Petroleum Company. Alkylation process. 4,249,030, Cl. 585-716.000.

Chapman, Dennis C.; and Sayre, David T., to General Motors Corporation. Dual function compressor bleed. 4,248,566, Cl. 415-26.000.

Chapman, Ralph L.: *See*—
Bozler, Carl O.; Chapman, Ralph L.; Fan, John C. C.; and McClelland, Robert W., 4,248,675, Cl. 204-38.00A.

Charbonnages de France: *See*—
Blanpain, Guy; and Grandfils, Pierre, 4,248,136, Cl. 91-305.000.

Charnitski, Richard D.; and Morgan, Curtis W. Method for measuring heart beat rate and circuit means for same. 4,248,244, Cl. 128-706.000.

Charpentier, John J., to Xplo Corporation. Explosive well-fracturing system. 4,248,303, Cl. 166-299.000.

Chase, Ascher, to General Foam Plastics Corp. Artificial christmas tree. 4,248,916, Cl. 428-8.000.

Chemed Corporation: *See*—
Puryear, Robert L., 4,248,728, Cl. 252-103.000.

Cheminal, Bernard; and Kiener, Paul, to Produits Chimiques Ugine Kuhlmann. Process for obtaining colorless and stable isophorone. 4,248,673, Cl. 203-35.000.

Chen, Pin-Wei, to United States of America, Air Force. Target discrimination apparatus. 4,249,177, Cl. 343-7.00A.

Cheng, Dah Y., to International Power Technology, Inc. Regenerative parallel compound dual fluid heat engine. 4,248,039, Cl. 60-39.050.

Cheshkov, Valeri M.: *See*—
Simeonov, Yordan T.; Cheshkov, Valeri M.; and Zahariev, Georgi Z., 4,248,760, Cl. 260-39.0SB.

Chevron Research Company: *See*—
Crawford, John; and Hill, Geoffrey A., 4,248,725, Cl. 252-51.50A.
Singer, Malcolm S., 4,248,620, Cl. 71-92.000.
Vaughan, Ronald J., 4,248,718, Cl. 252-33.000.

Chicago Bridge & Iron Company: *See*—
Stafford, Donald C., 4,248,357, Cl. 220-219.000.

Chierici, Osvaldo F.; and Murphy, Richard F., to Holland Company. Railway hopper car gate outlet actuating mechanism. 4,248,158, Cl. 105-282.00R.

Chilvers, Graham R. Vehicle mounted light activated control system. 4,249,160, Cl. 340-33.000.

Chimac Societe Anonyme: *See*—
Goldblatt, Andre J.; Gillet, Andre J.; and Forni, Luciano, 4,248,622, Cl. 71-121.000.

Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T.: *See*—
Szekely, Istvan; Lovasz, Marianna, nee Gaspar; Kovacs, Gabor; Soos, Rudolf; Nagy, Lajos; and Koszegi, 4,248,888, Cl. 424-306.000.

Chiyoda Chemical Engineering & Construction Co., Ltd.: *See*—
Wakabayashi, Motoyoshi; Ono, Takeo; Togari, Osamu; and Nakamura, Munekazu, 4,248,852, Cl. 423-626.000.

Cho, Alfred Y., to Bell Telephone Laboratories, Incorporated. Floating gate vertical FET. 4,249,190, Cl. 357-22.000.

Choate, J. Robert. Fluid control system. 4,248,268, Cl. 138-26.000.

Choi, Gwang H., to Ben Clements & Sons, Inc. Binding and sealing strip. 4,248,462, Cl. 292-322.000.

Choma, Michael A.; Simko, Aladar O.; Schechter, Michael M.; and Wade, Wallace R., to Ford Motor Company. Fuel injection fuel control system. 4,248,193, Cl. 123-341.000.

Chono, Masazumi; Maeda, Kunio; and Saito, Kunio, to Asahi Kasei Kogyo Kabushiki Kaisha. Salt of 1,3,6-tris(4,6-diamino-1,3,5-triazin-2-yl)-hexane and cyanuric acid. 4,249,004, Cl. 544-192.000.

Christensen, George C.: *See*—
Hansen, W. Robert; and Christensen, George C., 4,248,326, Cl. 182-185.000.

Christensen, Lyle S.; and Russel, Ocrel M., to Patent Technology, Inc. Processed blue cheese blend and method of formation. 4,248,897, Cl. 426-36.000.

Christenson, Roger M.: *See*—
Buchwalter, Stephen L.; Bosso, Joseph F.; and Christenson, Roger M., 4,248,753, Cl. 260-29.2TN.

Christian, Alfred W., to Hydrotile Canada Limited. Structure for directing concrete to pipe jacket. 4,248,580, Cl. 425-262.000.

Christiansen, James S. Adjustable beverage container holder. 4,248,366, Cl. 224-148.000.

Christiansen, Peter; and Kohlbacher, Gerhard, to Licentia Patent-Verwaltungs-G.m.b.H. Color decoder for color television receiver. 4,249,201, Cl. 358-24.000.

Christman, Harold E., to Brad Ragan, Inc. Method of and apparatus for making flotation tire and tire product. 4,248,287, Cl. 152-354.00R.

Christoph, Geert: *See*—
Wandel, Martin; Engelhard, Helmut; Gutschik, Ernst; Reichardt, Manfred; and Christoph, Geert, 4,248,934, Cl. 428-374.000.

Chrysler Corporation: *See*—
Cotter, Thomas N.; Carter, Robert L.; and Giuffrida, Sebastian J., 4,248,454, Cl. 280-668.000.
Warmbold, Helmut, 4,248,279, Cl. 141-348.000.

Chuck, Ted, to HTL Industries, Inc. Wheel-mounting tire pressure gage with failsafe features. 4,248,080, Cl. 73-146.800.

Chugai Seiyaku Kabushiki Kaisha: *See*—
Ikushima, Heizi; Igusa, Kazuo; and Bessho, Sadao, 4,248,867, Cl. 424-236.000.

Chuo Hatsujo Kabushiki Kaisha: *See*—
Aoyama, Toshiho, 4,248,833, Cl. 422-179.000.

Churchman, Ronald K., to Otis Engineering Corporation. Method and apparatus for recovering viscous petroleum from tar sand. 4,248,302, Cl. 166-272.000.

Ciba-Geigy AG: *See*—
Clubley, Brian G.; Davis, Boyce I. D.; Hyde, Thomas G.; Lamb, Frank; and Randell, Donald R., 4,248,976, Cl. 525-2.000.
Hagen, Remon; and Fryberg, Mario, 4,248,961, Cl. 430-381.000.
Long, William E., 4,248,772, Cl. 260-146.00R.

Ciba-Geigy Corporation: *See*—
Batzer, Hans; and Sinnreich, Joel, 4,249,000, Cl. 536-66.000.
Gosteli, Jacques, 4,249,027, Cl. 568-763.000.
Guglielmetti, Leonardo, 4,249,022, Cl. 562-488.000.
Hurter, Rudolf; and Fasciati, Alfred, 4,248,773, Cl. 260-148.000.
Scartazzini, Riccardo; and Bickel, Hans, 4,248,868, Cl. 424-246.000.
Schmidt, Andreas, 4,248,723, Cl. 252-48.600.

Cieri, James S.: *See*—
Waldron, Richard W.; and Cieri, James S., 4,248,282, Cl. 144-144.00R.

Ciments Lafarge France: *See*—
Falinower, Charles, 4,248,315, Cl. 177-50.000.

Cimperman, Frederick J.: *See*—
Margaroli, John L.; and Cimperman, Frederick J., 4,248,903, Cl. 426-512.000.

Ciobanu, Pia; Pop, Ioan; and Virlan, Grigore, to Institutul de Cercetari Textile. Multilayer bonded fabric and method of and apparatus for making same. 4,248,923, Cl. 428-197.000.

Civardi, Frank P.; Sova, Stanley G.; and Burachinsky, Bohdan V., to Inmont Corporation. Method of making leatherlike materials (A). 4,248,652, Cl. 156-219.000.

Clason, Donald L.; and Schroeck, Calvin W., to Lubrizol Corporation, The. Mixed metal salts and lubricants and functional fluids containing them. 4,248,722, Cl. 252-46.700.

Clausen, Edward M., to General Electric Company. Laser cutting of ceramic tubing. 4,248,369, Cl. 225-2.000.

Clauss, Wolfgang: *See*—
Ehrich, Hans J.; Clauss, Wolfgang; and Mahlkow, Hartmut, 4,248,632, Cl. 106-1.110.

Clay, Bobby J., to Natmar, Inc. Label machine. 4,248,112, Cl. 83-241.000.

Cleary & Co. Ltd.: *See*—
Cleary, William; and Farrow, Ivan J., 4,248,027, Cl. 53-244.000.

Cleary, William; and Farrow, Ivan J., to Cleary & Co. Ltd. Apparatus for filling containers. 4,248,027, Cl. 53-244.000.

Clemens, David H.: *See*—
Glavis, Frank J.; and Clemens, David H., 4,248,797, Cl. 564-288.000.

Close, G. M.: *See*—
McDonald, Edward S.; and Close, G. M., 4,248,494, Cl. 339-154.00A.

Clubley, Brian G.; Davis, Boyce I. D.; Hyde, Thomas G.; Lamb, Frank; and Randell, Donald R., to Ciba-Geigy AG. Flame-resistant polymer compositions. 4,248,976, Cl. 525-2.000.

Clucas, Richard H.: *See*—
Atkinson, Alan W.; Clucas, Richard H.; Lancaster, Robert A.; and Perkins, Allen M., 4,248,664, Cl. 162-145.000.

Coester, Jean Y., to Societe Anonyme de Telecommunications. Device for receiving and transmitting coded light signals and IFF system incorporating this device. 4,249,265, Cl. 455-604.000.

Cogbill, Philip H., II, to Brown & Williamson Tobacco Corp. Method for separating veins from lamina of tobacco leaf. 4,248,253, Cl. 131-146.000.

Colby, Leigh. Method for intraorally welding dental appliances. 4,249,060, Cl. 219-121.0LD.

Cole, Frederick A.; and Deak, Ronald L., to Sparton Corporation. Defect detection system. 4,249,081, Cl. 250-563.000.

Cole, James B., to Boeing Company, The. Airplane wing trailing-edge flap-mounting mechanism. 4,248,395, Cl. 244-216.000.

Colgate-Palmolive Company: *See—*
Wixon, Harold E., 4,248,911, Cl. 427-214.000.

Collignon, Claude: *See—*
Thominet, Michel; Bulteau, Gerard; Acher, Jacques; and Collignon, Claude, 4,248,885, Cl. 424-274.000.

Collins, Harold B.: *See—*
Sims, Larry A.; Lambert, Gerard L.; Gross, Raymond J.; and Collins, Harold B., 4,248,426, Cl. 273-108.000.

Collonia, Harald, to VDO Adolf Schindling AG. Device for regulating the traveling speed of a motor vehicle. 4,248,321, Cl. 180-179.000.

Colt Industries Operating Corp.: *See—*
Bell, Oliver A., Jr.; Gilleland, Randall C.; and Chance, Davey J., 4,249,059, Cl. 219-69.00G.

Colville, William T.; Mecone, David W.; and Hartman, Donald W., to GTE Products Corporation. Photoflash unit utilizing circuit board having flashlamps clamped thereto. 4,249,230, Cl. 362-13.000.

Combustion Engineering, Inc.: *See—*
Sullivan, Robert P.; and Jacobs, Clyde L., 4,248,180, Cl. 122-390.000.

Comes, Rocky J.: *See—*
Addison, Carl E.; and Comes, Rocky J., 4,248,260, Cl. 137-899.000.

Compagnie Internationale Pour L'Informatique Cii-Honeywell Bull (Societe Anonyme): *See—*
Mescam, Jean-Francois; and Balla, Thomas, 4,249,239, Cl. 364-200.000.

Compax Corporation: *See—*
Diggle, Edmund A., Jr.; and Moser, Paul, 4,247,969, Cl. 26-18.600.

Compton, Dennis N.: *See—*
Lichliter, William L.; and Compton, Dennis N., 4,247,964, Cl. 15-162.000.

Computing Devices Company: *See—*
Harman, R. Keith; and Patchell, John W., 4,249,207, Cl. 358-108.000.

Conger, William W., IV. Air blower for spas or the like. 4,248,570, Cl. 415-148.000.

Congoleum Corporation: *See—*
Shortway, Harry A.; Graham, Alan A.; and Miller, Charles H., 4,248,922, Cl. 428-159.000.

Conkling, William C., to Pennwalt Corporation. Apparatus for production of sodium hypochlorite. 4,248,690, Cl. 204-268.000.

Conoco, Inc.: *See—*
Dodd, John R., 4,249,026, Cl. 568-750.000.
Lancet, Michael S., 4,248,605, Cl. 48-197.00R.
Washecheck, Paul H.; and Hale, Ron G., 4,248,747, Cl. 260-23.0XA.

Consolidated Energy Products Company: *See—*
MacGregor, James G., 4,247,992, Cl. 34-91.000.

Consolidation Coal Company: *See—*
Halvorsen, William J., 4,248,697, Cl. 209-5.000.

Continental Group, Inc., The: *See—*
Gerber, Howard L., 4,248,653, Cl. 156-272.000.

Continental Oil Company: *See—*
Theodore, Frank W.; Wasson, George E.; Jasulaitis, William A.; and Gorin, Everett, 4,248,669, Cl. 201-6.000.

Cook, William H., to Fabridyne, Inc. Polyurethane compositions derived from polyols containing a controlled distribution of carboxamide groups. 4,248,994, Cl. 528-60.000.

Coon, Delbert L.; and Schiefer, Harry M., to Dow Corning Corporation. Sulfur processing release agents. 4,248,825, Cl. 264-213.000.

Cooper, Charles F., to J. Tennant & Sons (Warrington) Limited. Gas burners. 4,248,586, Cl. 431-328.000.

Cornelius, Richard T., deceased; and Lareau, Richard G., executor, to McQuay-Perfex Inc. Key-operated actuator. 4,248,335, Cl. 194-4.00D.

Corning Glass Works: *See—*
Ambrogi, Raymond R., 4,248,925, Cl. 428-212.000.
Beaty, Robert C.; and Mansfield, Gerald R., 4,248,174, Cl. 118-665.000.
Herczog, Andrew; and Murphy, James A., 4,248,231, Cl. 128-303.140.
McDonald, Hugh C., 4,248,964, Cl. 435-7.000.
Scherer, George W., 4,248,614, Cl. 65-3.00A.

Corrigan, Malcolm J. Bubble target amusement device. 4,248,436, Cl. 273-349.000.

Cotter, Thomas N.; Carter, Robert L.; and Giuffrida, Sebastian J., to Chrysler Corporation. Suspension strut isolator mount. 4,248,454, Cl. 280-668.000.

Coulaloglou, Costas A.; and Siegell, Jeffrey H., to Exxon Research & Engineering Co. Continuous countercurrent fluid-solids contacting process stabilized by a magnetic field. 4,247,987, Cl. 34-1.000.

Coulthard, John. Measurement of relative velocities. 4,248,085, Cl. 73-861.060.

Coupland, Keith; Smith, Clinton R.; and Salva, Juan M., to Exxon Research & Engineering Co. Organo molybdenum friction-reducing antiwear additives. 4,248,720, Cl. 252-42.700.

Courtney, Watson L.: *See—*
Watson, Thomas E.; and Courtney, Watson L., 4,248,054, Cl. 62-175.000.

Cox, Robert M.; Kilmer, Dan L.; and Kolkowski, Adam, to SLI Industries, Inc. Method and apparatus for preventing contamination of a rotating magnetic disc. 4,249,221, Cl. 360-97.000.

Cragoe, Edward J., Jr.; Williams, Haydn W. R.; and Woltersdorf, Otto W., Jr., to Merck & Co., Inc. Indanacetic acid compounds. 4,249,021, Cl. 562-462.000.

Craven, Geoffrey F.: *See—*
Wallace, Walter M.; and Craven, Geoffrey F., 4,248,702, Cl. 209-455.000.

Craven, Tyson S., to Georgia Tech Research Institute. Self-calibrating voltage standing-wave ratio meter system. 4,249,258, Cl. 455-115.000.

Crawford, Charles K. Ion charge neutralization for electron beam devices. 4,249,077, Cl. 250-306.000.

Crawford, John; and Hill, Geoffrey A., to Chevron Research Company. Dispersants having antioxidant activity and lubricating compositions containing them. 4,248,725, Cl. 252-51.50A.

Critikon, Inc.: *See—*
Assenza, John S.; and Thomas, Joseph J., 4,248,234, Cl. 128-348.000.

Crochet, Michel; and Lecot, Georges, to Thomson-CSF. Method and system for transmitting signals by fiber optics. 4,249,264, Cl. 455-612.000.

Cromer, Charles F.: *See—*
Fischer, William H.; Cromer, Charles F.; Hess, Robert L.; and Berkebile, Lee E., 4,249,049, Cl. 200-144.00R.

Cross, Eston F. Log handling fork. 4,248,464, Cl. 294-9.000.

Crossley, Roger, to John Wyeth & Brother Ltd. Certain 4-formamidothiazoles. 4,249,012, Cl. 548-195.000.

Crum, Gerald W.: *See—*
Hollstein, Thomas E.; Crum, Gerald W.; and Frey, Louis A., 4,248,379, Cl. 239-1.000.

Crump, Robert F. Remote control cap for a spray can. 4,248,360, Cl. 222-174.000.

Cullen, Brown, Jr. Tee located device for indicating the position of a cup in a golf course green. 4,247,994, Cl. 434-153.000.

Cummings, Charles A. Toy electric convection oven. 4,249,067, Cl. 219-392.000.

Cummins Engine Company, Inc.: *See—*
Wilson, Harry L.; and Shultz, David E., 4,248,188, Cl. 123-382.000.

Cunningham, Hugh, to PPG Industries, Inc. Electrolytic cell. 4,248,689, Cl. 204-252.000.

Cunningham, Robert A.; and Pessier, Rudolph C. O., to Hughes Tool Company. Shaft drill bit with overlapping cutter arrangement. 4,248,314, Cl. 175-344.000.

Curtiss, Walter W., Jr.; and Rye, Grover W., to Goodyear Tire & Rubber Company, The. Safety support assembly for pneumatic tires. 4,248,286, Cl. 152-158.000.

Cushing, Donald S., to General Electric Company. Automatic resetting power saver switch for dishwasher. 4,249,090, Cl. 307-154.000.

Cut Rate Plastic Hangers, Inc.: *See—*
Zuckerman, Jack M.; and Warmath, John, 4,248,363, Cl. 223-91.000.

Cutter, Albert F. Telephone communication control system. 4,249,040, Cl. 179-2.00A.

Cybernet Electronics Corporation: *See—*
Kakigi, Yasugi; and Kakigi, Takao, 4,249,082, Cl. 250-574.000.

Czerewaty, Frank P., to Cameron Iron Works, Inc. Apparatus for anchoring a platform at an offshore location. 4,248,549, Cl. 405-224.000.

Czumak, Frank M., to Polaroid Corporation. Multipurpose photographic film handling cassette having an improved film processor arrangement. 4,248,507, Cl. 352-130.000.

Dach, Michael M.: *See—*
Woldy, Paul N.; Kaufman, Harold C.; Dach, Michael M.; and Beall, James F., 4,248,604, Cl. 48-197.00R.

Dahlberg, Reinhard. Thermoelectric arrangement. 4,249,121, Cl. 322-2.00R.

Dahlstrom, Claes-Inge S. Centering for casting concrete roofs. 4,248,024, Cl. 52-632.000.

Daikin Kogyo Co., Ltd.: *See—*
Yoshimura, Tatsushiro; and Tominaga, Shigetake, 4,248,763, Cl. 260-42.220.

Daimler-Benz Aktiengesellschaft: *See—*
Koucky, Antonin; and Krugener, Rolf, 4,248,480, Cl. 297-473.000.

Dainippon Pharmaceutical Co., Ltd.: *See—*
Sawayama, Tadahiro; Kinugasa, Hiroaki; Nishimura, Haruki; Takeyama, Kunihiko; and Hosoki, Kanoo, 4,248,883, Cl. 424-274.000.

Danford-Champlin Farms, Ltd.: *See—*
Danford, Jack D., 4,248,548, Cl. 405-129.000.

Danford, Jack D., to Danford-Champlin Farms, Ltd. Sewage disposal system and apparatus. 4,248,548, Cl. 405-129.000.

Danfoss A/S: *See—*
Jakobsen, Jakob S., 4,248,377, Cl. 236-68.00B.

Danilychev, Vladimir A.: *See—*
Basov, Nikolai G.; Berezhnoi, Igor A.; Vekshin, Vyacheslav S.; Danilychev, Vladimir A.; Elatontsev, Albert I.; Ignatiev, Vladimir V.; Karyshev, Vitaly D.; and Togulev, Alexandr K., 4,249,158, Cl. 340-26.000.

Danner, Donald J. Manhole ceiling tent. 4,248,546, Cl. 404-25.000.

Darakjy, David L.; and Zanteson, Leland A., to System Development Corporation. Vented radio frequency shielded enclosure. 4,249,033, Cl. 174-16.00R.

Darcy, Jon J.; Angerame, Richard A.; and Kramer, Aaron R. System and method for controlling air conditioning systems. 4,248,051, Cl. 62-115.000.

Dardaine, Edgar, to E. P. Remy et Cie. Grid for guiding receptacles and seizing head equipped with such a grid. 4,248,028, Cl. 53-248.000.

Darlington, R. Keith: *See*—
Toomey, Robert D.; Davis, Brian R.; Neelameggham, Ramaswami; and Darlington, R. Keith, 4,248,839, Cl. 423-178.000.

Darlington, William B.: *See*—
Carlin, William W.; Darlington, William B.; DuBois, Donald W.; and Woo, Roseanne M., 4,248,680, Cl. 204-98.000.

Datta, Pabitra; Westdale, Virgil W.; and Novotny, John, Jr., to AM International, Inc. Coated carrier particles for use in electrophotographic process. 4,248,954, Cl. 430-97.000.

Davis, Austin E., to Nashua Corporation. Solid metering roll. 4,248,522, Cl. 355-10.000.

Davis, B. Thurman: *See*—
Davis, O. Thurston; and Davis, B. Thurman, 4,248,197, Cl. 123-557.000.

Davis, Boyce I. D.: *See*—
Clubley, Brian G.; Davis, Boyce I. D.; Hyde, Thomas G.; Lamb, Frank; and Randell, Donald R., 4,248,976, Cl. 525-2.000.

Davis, Brian R.: *See*—
Toomey, Robert D.; Davis, Brian R.; Neelameggham, Ramaswami; and Darlington, R. Keith, 4,248,839, Cl. 423-178.000.

Davis, Donald E.; and Youngouist, Robert J., to Minnesota Mining and Manufacturing Company. Method and apparatus for editing digitally recorded audio signals. 4,249,218, Cl. 360-13.000.

Davis, O. Thurston; and Davis, B. Thurman. Apparatus for reducing hydrocarbon emissions improving efficiency of vehicle internal combustion engines. 4,248,197, Cl. 123-557.000.

Davis, Ronald A., to Litton Business Systems, Inc. Business form. 4,248,919, Cl. 428-40.000.

Day, Arthur D., III; and Ginder, Harold B., to Borg-Warner Corporation. Hot gas bypass control for centrifugal liquid chillers. 4,248,055, Cl. 62-196.00C.

Dayco Corporation: *See*—
Hofle, Anatoli; and Haren, Doyle V., 4,248,309, Cl. 169-47.000.
Spivy, Paul L., 4,248,110, Cl. 83-53.000.

DBM Industries Limited: *See*—
Perrella, Guido; and Thompson, William E., 4,248,289, Cl. 164-153.000.

Deak, Ronald L.: *See*—
Cole, Frederick A.; and Deak, Ronald L., 4,249,081, Cl. 250-563.000.

Dearling, Roy P., to Fowler, Kenneth; and Glover, Edward. Reversible-cycle closed-circuit refrigeration systems. 4,248,059, Cl. 62-324.00D.

De Busscher, Cyriel R. J.; and Van Herpe, Francois, to Sperry Rand Corporation. Interrupted infeed flight means for combine rotor. 4,248,248, Cl. 130-27.0HA.

Decaux, Jean-Claude, to Jean Claude Decaux Paris Publicite Abribus. Luminous edge lighted device. 4,249,231, Cl. 362-31.000.

De Cesari, Robert J. Portable, collapsible cubical quad antenna. 4,249,185, Cl. 343-871.000.

Decibel Products, Inc.: *See*—
Jachowski, Ronald E., 4,249,148, Cl. 333-208.000.

Deckenback, Carl M.; Catrombon, George T.; and Rowe, Lester A., to Union Carbide Corporation. Controlled depth scoring system. 4,248,559, Cl. 409-307.000.

de Cleur, Eckhard; Dhein, Rolf; Rudolph, Hans; Kreuder, Hans J.; Muller, Hanns P.; Schafer, Walter; Wagner, Kuno; and Findeisen, Kurt, to Bayer Aktiengesellschaft. Pulverulent coating composition. 4,248,978, Cl. 525-124.000.

Decoufle S.A.R.L.: *See*—
Verjux, Jean, 4,248,113, Cl. 83-310.000.

Deere & Company: *See*—
Behrens, Robert N., 4,248,331, Cl. 192-13.00R.

Degen, Ludwig: *See*—
Viglia, Aurelio; Fascetti, Eugenio; Perricone, Elena; and Degen, Ludwig, 4,248,967, Cl. 435-106.000.

Dekas, Socrates: *See*—
Barroero, Louis F.; and Dekas, Socrates, 4,248,489, Cl. 312-296.000.

Delalande S.A.: *See*—
Bourgery, Guy R.; Lacour, Alain P.; Moinet, Gerard H.; Pourrias, Bernard M.; and Ruch, Anne-Marie P., 4,248,788, Cl. 260-340.300.

Del Cueto, Carlos: *See*—
Salvans, Juan; Del Cueto, Carlos; and Del Cueto, Fernando L., 4,248,592, Cl. 8-485.000.

Del Cueto, Fernando L.: *See*—
Salvans, Juan; Del Cueto, Carlos; and Del Cueto, Fernando L., 4,248,592, Cl. 8-485.000.

Del Pozo, Albert J., Jr., to Favorite Plastic Corporation. Stretch wrap machine. 4,248,031, Cl. 53-556.000.

Delta Promotions, Inc.: *See*—
Hedstrom, Mark D., 4,248,005, Cl. 43-112.000.

DeLuca, Hector F.; Tanaka, Yoko; Ikekawa, Nobuo; and Kobayashi, Yoshiro, to Wisconsin Alumni Research Foundation. 25-Hydroxy-26,26,26,27,27,27-hexafluorocholecalciferol. 4,248,791, Cl. 260-397.200.

Demain, Arnold L.; Konomi, Toshio; and Baldwin, Jack E., to Massachusetts Institute of Technology. Synthesis of isopenicillin derivatives in the absence of living cells. 4,248,966, Cl. 435-43.000.

De Mesmaeker, Ivan, to BBC Brown, Boveri & Company, Limited. Method and apparatus for monitoring faults by means of a polygonal trigger region. 4,249,124, Cl. 324-51.000.

DeNeale, Richard J.; Guley, Paul C.; and Milosovich, George, to American Home Products Corporation. Sustained release pharmaceutical compositions. 4,248,857, Cl. 424-21.000.

DeNeale, Richard J.: *See*—
Guley, Paul C.; DeNeale, Richard J.; and Milosovich, George, 4,248,856, Cl. 424-21.000.
Guley, Paul C.; DeNeale, Richard J.; and Milosovich, George, 4,248,858, Cl. 424-21.000.

Dennis, John R.; and Fish, Harold D., to Halliburton Company. System and method for determining fluid level in a container. 4,248,087, Cl. 73-290.00V.

Dentsply Research & Development Corp.: *See*—
Johnson, Philip C., 4,248,444, Cl. 280-47.110.

Derleth, Helmut; Walter, Ludwig; Bretz, Karl-Heinrich; and Kurs, Artur, to Kali-Chemie AG. Process for preparing a substantially crystalline sodium aluminosilicate. 4,248,847, Cl. 423-329.000.

DeRoy, Leonce. Support for sharpening chain saws at the work site. 4,248,412, Cl. 269-102.000.

Desch, Willy: *See*—
Schminke, Heinz; Krebs, Rudolf; Wendel, Gunter; Schmidt, Hans-Jurgen; Desch, Willy; and Nitz, Jurgen, 4,248,610, Cl. 55-101.000.

Des Gaines, Laurence. Guitar pick array. 4,248,128, Cl. 84-322.000.

Deussner, Herbert, to Klockner-Humboldt-Deutz AG. Method and apparatus for the production of cement clinkers from moist agglomerated raw material. 4,248,641, Cl. 106-100.000.

Deutschmann, Herbert; and Geray, Franz, to Motor und Turbinen-Union Freidrichshafen GmbH. Multi-cylinder diesel engine. 4,248,198, Cl. 123-559.000.

Devitt, Gerald J.; and Ritter, Richard A. Flat roof auxiliary drain system. 4,248,258, Cl. 137-124.000.

DeVries, Robert C.: *See*—
Bovenkerk, Harold P.; and DeVries, Robert C., 4,248,606, Cl. 51-307.000.

Dexter, John L. Pyramid loudspeakers with twin cross-phased mid-range speakers. 4,249,037, Cl. 179-1.0GA.

Dhein, Rolf: *See*—
de Cleur, Eckhard; Dhein, Rolf; Rudolph, Hans; Kreuder, Hans J.; Muller, Hanns P.; Schafer, Walter; Wagner, Kuno; and Findeisen, Kurt, 4,248,978, Cl. 525-124.000.

Diamand, Felix; Bourrabier, Guy; and Antoine, Robert, to Thomson-CSF. Ultra high-frequency circuit with resonant cavity equipped with pairs of peripheral diodes. 4,249,149, Cl. 333-223.000.

Dick, Heinz, to Ford Motor Company. Headlamp, particularly for motor vehicles. 4,249,232, Cl. 362-61.000.

Dick, John D., to Rollei of America, Inc. Controlled energy cut-off for an electronic flash device. 4,249,110, Cl. 315-241.00P.

Dickson, Stewart. Stringed musical instrument with electrical feedback. 4,248,120, Cl. 84-1.160.

Didycz, William J.: *See*—
Aiken, John E.; Didycz, William J.; and Kerkentzes, Stanley J., 4,248,832, Cl. 422-177.000.

Diederich, Walter J., to Gillette Company, The. Catalytically heated curling device with automatic temperature control. 4,248,208, Cl. 126-409.000.

Diggle, Edmund A., Jr.; and Moser, Paul, to Compax Corporation. Method for moisture conditioning of compressively treated fabric. 4,247,969, Cl. 26-18.600.

Diker, Charles M.: *See*—
Kirby, James S.; Jones, Lawrence; Moe, Walter; and Diker, Charles M., 4,248,012, Cl. 46-262.000.

Dinius, David A.: *See*—
Lyon, Cameron K.; Kohler, George O.; and Dinius, David A., 4,248,899, Cl. 426-98.000.

Diperstein, David, to Seal Lock International, Inc. Method and apparatus for repairing cracked metal parts. 4,247,973, Cl. 29-402.110.

Director of National Research Institute of Tea: *See*—
Okada, Fumio, 4,248,789, Cl. 260-345.200.

Dixon, Robert C.; Graf, Walter A., Jr.; and Sponseller, David R., to General Electric Company. Storage module for nuclear fuel assemblies. 4,248,668, Cl. 176-30.000.

Dmitrowsky, Igor. Bicycle enabling a substantially full length prone riding position. 4,248,448, Cl. 280-261.000.

Doak, Kenneth.: *See*—
Milkovich, Ralph; Doak, Kenneth; and Bi, Le-Khac, 4,248,981, Cl. 525-271.000.

Doak, Kenneth W.: *See*—
Bi, Le-Khac; Milkovich, Ralph; and Doak, Kenneth W., 4,248,983, Cl. 525-314.000.
Bi, Le-Khac; Milkovich, Ralph; and Doak, Kenneth W., 4,248,984, Cl. 525-314.000.

Dobrovolsky, Stanislav D.: *See*—
Paton, Boris E.; Lebedev, Vladimir K.; Kuchuk-Yatsenko, Sergei I.; Sakharnov, Vasily A.; Galyan, Boris A.; Dobrovolsky, Stanislav D.; and Sidorenko, Mikhail N., 4,249,153, Cl. 336-82.000.

Dobrusskin, Alexander: *See*—
Krieg, Rudolf; Dobrusskin, Alexander; and Krense, Horst, 4,249,102, Cl. 313-116.000.

Dodd, John R., to Conoco, Inc. Separating 2,5-xylenol from a mixture of 2,5-xylenol and 2,4-xylenol. 4,249,026, Cl. 568-750.000.

Doi, Yasuhiko; Shimizu, Shigemitsu; Matsui, Toshio; Kawai, Yoshihisa; Irie, Yutaka; Suzuki, Norihiko; and Iwao, Soichi, to Minolta Camera Kabushiki Kaisha. Electrophotographic copying apparatus equipped with improved copy paper cutting arrangement. 4,248,523, Cl. 355-13.000.

Dolega, Ulrich: *See*—
Schulz, Egon; and Dolega, Ulrich, 4,249,192, Cl. 357-38.000.

Doniat, Denis, to SORAPEC Societe de Recherche et d'Applications Electrochimiques. Electrolytic-cell and a method for electrolysis, using same. 4,248,684, Cl. 204-149.000.
Dougherty Brothers Company: *See—*
Locke, Merrel J.; and Penman, Arthur W., 4,248,349, Cl. 206-538.000.
Doughman, Charles L.: *See—*
Shuey, Kenneth C.; Baker, Donal E.; and Doughman, Charles L., 4,249,223, Cl. 361-4.000.
Dow Chemical Company, The: *See—*
Wernli, Walter L.; Fry, William E.; and Janda, Steve F., 4,248,741, Cl. 252-463.000.
Dow Corning Corporation: *See—*
Coon, Delbert L.; and Schiefer, Harry M., 4,248,825, Cl. 264-213.000.
Fraleigh, Ronald M.; and Marinik, James A., 4,248,768, Cl. 260-45.75R.
Plueddemann, Edwin P., 4,248,761, Cl. 260-42.000.
Willing, David N., 4,248,751, Cl. 260-29.20M.
Dowa Mining Co., Ltd.: *See—*
Jinno, Takayuki; Kotake, Yasuo; and Kikuchi, Toshihiro, 4,248,312, Cl. 175-57.000.
Downing, James W.; and Verhoeven, Teunes, to McDonnell Douglas Corporation. Horizontal stabilizer drive. 4,248,105, Cl. 74-710.500.
Doyel, John S. Wall mounted fluid dispenser. 4,248,398, Cl. 248-220.100.
Doyle, Earl N.; Trevino, Rene; and Hicks, Richard S. Safety tires, methods and equipment therefor. 4,248,811, Cl. 264-46.600.
Doyle, John M., Jr.: *See—*
Watkins, Richard R.; Briggs, C. Steven; and Doyle, John M., Jr., 4,249,172, Cl. 340-726.000.
Dragerwerk Aktiengesellschaft: *See—*
Kempin, Hans-Friedhelm, 4,248,245, Cl. 128-719.000.
Drake, Charles A., to Phillips Petroleum Company. Hydrogenation of nitriles in ammonia and water. 4,248,799, Cl. 564-491.000.
Dren, Anthony T.; and Bopp, Barbara A., to Abbott Laboratories. Benzopyrano compounds as antiglaucoma agents. 4,248,874, Cl. 424-256.000.
Drent, Eit; and van der Werf, Ringnerus P., to Shell Oil Company. Process for the preparation of a hydrocarbon mixture. 4,249,031, Cl. 585-733.000.
Dresser Europe SA: *See—*
Parrott, George A., 4,248,483, Cl. 299-53.000.
Dresser Industries, Inc.: *See—*
Blattner, Raymond J., 4,248,107, Cl. 81-483.000.
McGuire, Robert C.; and Belcher, John J., Jr., 4,248,611, Cl. 55-238.000.
White, James E.; and Shields, Santos, 4,248,485, Cl. 308-8.200.
Drew, Maurice J. Pressure switch. 4,249,048, Cl. 200-83.00F.
Drewery, John O.: *See—*
Storey, Richard; and Drewery, John O., 4,249,210, Cl. 358-167.000.
Drutchas, Gilbert H.; and Wormley, David N., to TRW Inc. Method and apparatus for controlling the operation of a pump. 4,248,194, Cl. 123-357.000.
Dual Gebruder Steidinger: *See—*
Reuter, Rudolf, 4,247,976, Cl. 29-527.400.
DuBois, Donald W.: *See—*
Carlin, William W.; Darlington, William B.; DuBois, Donald W.; and Woo, Roseanne M., 4,248,680, Cl. 204-98.000.
Dubuit, Jean-Louis. Silk screen printing machine. 4,248,149, Cl. 101-123.000.
Dugge, Richard H., to ACF Industries, Incorporated. End cap arrangement utilizing large headed bolts. 4,248,552, Cl. 406-129.000.
Dulux Australia Ltd: *See—*
Fox, Susan M.; and Gibson, David V., 4,248,754, Cl. 260-29.60E.
Dungs, Horst: *See—*
Lorenz, Kurt; and Dungs, Horst, 4,248,670, Cl. 202-99.000.
Weber, Heinrich; Dungs, Horst; Ferdinand, Fritz; Brasseur, Yves; and Birscheidt, Henri, 4,248,603, Cl. 44-10.00J.
Dunlap, David R., to A. P. Green Refractories Co. Insulated ceramic fiber refractory module. 4,248,023, Cl. 52-506.000.
Dunlop Limited: *See—*
McGlashen, James N., 4,248,658, Cl. 156-475.000.
Dunn, Karl M.: *See—*
McCarthy, Bruce L.; and Dunn, Karl M., 4,248,356, Cl. 215-344.000.
Dunn, Neil C.; Francis, Robert L.; and Smith, Harold E., to International Harvester Company. Combine rotor drive anti-trash system. 4,248,249, Cl. 130-27.00T.
Dunphy, Gerald F.: *See—*
Esser, Hans J.; and Dunphy, Gerald F., 4,248,068, Cl. 70-134.000.
Du Pont de Nemours, E. I., and Company: *See—*
Barron, Eugene R., 4,248,036, Cl. 57-227.000.
Mouissie, Bob, 4,248,491, Cl. 339-17.00F.
Pieski, Edwin T.; and Sashihara, Thomas F., 4,248,990, Cl. 526-317.000.
Vaidya, Upen I., 4,248,764, Cl. 260-42.330.
Yunan, Malak E., 4,248,152, Cl. 102-27.00F.
Durenec, Peter, to United States of America, Army. Double-yoke balanced compressor. 4,248,050, Cl. 62-6.000.
Durney, David J.; and Lockhart, James A., Jr., to Burroughs Corporation. Integrated circuit module with integral capacitor. 4,249,196, Cl. 357-74.000.
Duro-Test Corporation: *See—*
Walsh, Peter, 4,249,101, Cl. 313-112.000.
Durr, Jerry A.: *See—*
Moore, Leonard; and Durr, Jerry A., 4,249,228, Cl. 361-388.000.
Dyer, Frederick W., to H. H. Robertson Company. Support means for wall or roof structure. 4,248,021, Cl. 52-404.000.
Dynapol: *See—*
Bunes, Leonard A., 4,249,007, Cl. 546-58.000.
E. P. Remy et Cie: *See—*
Dardaine, Edgar, 4,248,028, Cl. 53-248.000.
E. R. Squibb & Sons, Inc.: *See—*
Hoehn, Hans, 4,248,878, Cl. 424-267.000.
Hoehn, Hans, 4,248,881, Cl. 424-273.00P.
Sykes, Richard B.; Wells, Jerry S.; and Liu, Wen-Chih, 4,249,008, Cl. 546-281.000.
Varma, Ravi K.; and Vogt, B. Richard, 4,248,783, Cl. 260-239.55D.
Eapen, Kuttikandathil E.; and Kahn, Marvin L., to Rich Products Corporation. Intermediate-moisture meat products. 4,248,902, Cl. 426-332.000.
Earle, Kent L., to McGraw-Edison Co. Variable speed induction motor control system. 4,249,120, Cl. 318-729.000.
Eastman Kodak Company: *See—*
Baigrie, Brian D.; Bailey, Joseph; Johnston, Linda G.; and Mijovic, Miroslav V., 4,248,956, Cl. 430-225.000.
Gentile, Ralph; and Lercher, John S., 4,248,564, Cl. 414-412.000.
Lau, Philip T. S., 4,248,962, Cl. 430-382.000.
Smith, David S., 4,248,531, Cl. 355-91.000.
Sterrett, Robert M., 4,248,525, Cl. 355-14.0SH.
Easton, James L.; and Filice, Gary W., to James D. Easton, Inc. Hollow bat and method of making. 4,248,425, Cl. 273-72.00A.
Ebauches S.A.: *See—*
Huguenin, Freddy, 4,248,503, Cl. 350-357.000.
Eberhard, Rolf; and Maiwurm, Ulrich, to Wagener & Co. Press platen for belt press. 4,249,066, Cl. 219-243.000.
Eberle, Gernot; Walker, Anthony R.; Goodchild, William; and Humbert-Droz, Patrice L. D., to Northern Telecom Limited. Past dependent microcomputer cipher apparatus. 4,249,180, Cl. 375-2.000.
Ebert, Hans: *See—*
Niermann, Hermann; Reichert, Gunter; Ebert, Hans; and Neumann, Friedrich, 4,248,602, Cl. 23-293.00R.
Ebnother, Anton: *See—*
Rissi, Erwin; and Ebnother, Anton, 4,248,877, Cl. 424-267.000.
Eby, Richard L.; and Wilson, Lester E., to Anderson Power Products, Inc. Electrical device with bi-level battery state-of-charge indicator. 4,248,942, Cl. 429-93.000.
Eck, Richard H. Radiant heater and method of making same. 4,247,979, Cl. 29-611.000.
Eden, J. Gary, to United States of America, Navy. Xenon fluoride and mercury chloride photodissociation lasers. 4,249,143, Cl. 331-94.50G.
Edwards, Roger D., to Leeds & Northrup Limited. Processor system for display and/or recording of information. 4,249,186, Cl. 346-35.000.
Effa Etudes: *See—*
Rousseau, Alain; and Ramel, Francois, 4,248,061, Cl. 62-419.000.
Egli, Hans; Byrne, Joe L.; and Nancarrow, James H., to Garrett Corporation, The. Energy transfer machine. 4,248,567, Cl. 415-53.00T.
Ehrich, Hans J.; Clauss, Wolfgang; and Mahlkow, Hartmut, to Schering Aktiengesellschaft. Solution and process for the activation of surfaces for metallization. 4,248,632, Cl. 106-1.110.
Eichenauer, Rudolf. Steering column and ignition lock for motor vehicle. 4,248,070, Cl. 70-252.000.
Eichler, Kenneth M.: *See—*
Mandel, Alan F.; Capuano, Louis M.; Otto, Paul R.; and Eichler, Kenneth M., 4,248,327, Cl. 187-29.00R.
Eisenlohr, Karl-Heinz, to Metallgesellschaft Aktiengesellschaft. Process of producing a suspension of brown coal and oil for hydrogenation. 4,248,691, Cl. 208-8.0LE.
Elatontsev, Albert I.: *See—*
Basov, Nikolai G.; Berezhnoi, Igor A.; Vekshin, Vyacheslav S.; Danilychev, Vladimir A.; Elatontsev, Albert I.; Ignatiev, Vladimir V.; Karyshev, Vitaly D.; and Togulev, Alexandr K., 4,249,158, Cl. 340-26.000.
Elbert, Hubert F., to Singer Company, The. Apparatus and method for the elimination of angular vibration induced errors in ring laser gyroscopes. 4,248,534, Cl. 356-350.000.
Electric Power Research Institute: *See—*
Votta, Gerald A., 4,249,051, Cl. 200-147.00R.
Electric Power Research Institute, Inc.: *See—*
Fischer, William H.; Cromer, Charles F.; Hess, Robert L.; and Berkebile, Lee E., 4,249,049, Cl. 200-144.00R.
Vasile, Carmine F.; Thompson, Robert B.; and Fortunko, Christopher M., 4,248,092, Cl. 73-643.000.
Votta, Gerald A.; and Weston, Donald E., 4,249,052, Cl. 200-147.00R.
Elizabeth, Kathleen. Process for making a record. 4,248,818, Cl. 264-107.000.
Elliott, Geoffrey: *See—*
Harrison, John; Allsopp, Frederick; and Elliott, Geoffrey, 4,248,649, Cl. 156-174.000.
Ellwood, Derek C.; Manchee, Richard J.; and Robinson, Andrew, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State in Her Britannic Majesty's Government of the. Immunogenic cell envelope preparations. 4,248,862, Cl. 424-92.000.
Else, Ronald: *See—*
Morgan, Adrian J.; Williams, John K.; and Else, Ronald, 4,249,043, Cl. 179-111.00E.
Emerson Electric Co.: *See—*
Grable, Jack W., 4,249,154, Cl. 337-360.000.

Endo, Akira: *See*—
Oka, Hidehiko; Terahara, Akira; and Endo, Akira, 4,248,889, Cl. 424-308.000.
Engelbrecht, Eckart; and Nieder, Elmar. Method of dissolving the bond between interconnected components. 4,248,232, Cl. 128-305.000.
Engelhard, Helmut: *See*—
Wandel, Martin; Engelhard, Helmut; Gutschik, Ernst; Reichardt, Manfred; and Christoph, Geert, 4,248,934, Cl. 428-374.000.
Engelhard Minerals and Chemicals Corporation: *See*—
Hoeschele, James D.; and Amundsen, Alan R., 4,248,840, Cl. 423-302.000.
Engineered Products Security Corporation: *See*—
Boucher, August S.; and Haaker, Clarence R., 4,248,554, Cl. 408-97.000.
Enoguchi, Yuji: *See*—
Kurita, Takaji; and Enoguchi, Yuji, 4,248,520, Cl. 355-3.0FU.
Enomoto, Minoru: *See*—
Aoi, Hajime; Tamura, Takashi; Koizumi, Makoto; Kunimi, Noboru; Enomoto, Minoru; and Hatanaka, Noriaki, 4,249,219, Cl. 360-46.000.
Envirotech Corporation: *See*—
Belding, John, 4,248,671, Cl. 202-228.000.
Isheim, Maynard C., 4,248,164, Cl. 110-225.000.
Erickson, Norman; and Meier, James, to Norlin Industries, Inc. Keyboard assembly. 4,248,130, Cl. 84-434.000.
Erikson, Rolf B.; Zemke, Edward H.; and Guenther, Kenneth L., to Bell & Howell Company. Ink jet printer with deflected nozzles. 4,249,187, Cl. 346-75.000.
Eriksoo, Edgar, to Aktiebolaget Leo. Polycyclic amines and intermediates therefor. 4,249,002, Cl. 544-38.000.
Eriksoo, Edgar, to Aktiebolaget Leo. Process for polycyclic amines. 4,249,003, Cl. 544-38.000.
Erlandsson, Lars: *See*—
Jansson, Conny; Erlandsson, Lars; and Appelkvist, Rolf, 4,247,983, Cl. 30-124.000.
Ernst, Donald M.; and Sanzi, James L., to Thermacore, Inc. Freezable heat pipe. 4,248,295, Cl. 165-105.000.
Erskine, Clive A., to ACI Technical Centre Pty Ltd. Foamed insulating materials and method of manufacture. 4,248,810, Cl. 264-43.000.
Erwin Sick GmbH Optik-Elektronik: *See*—
Sick, Erwin, 4,248,537, Cl. 356-431.000.
Escher, Sina D.; and Morris, Anthony F., to Firmenich SA. Use of a hydroxylic bicyclic derivative as perfuming ingredient. 4,248,742, Cl. 252-522.00R.
Esna-Ashari, Mohammed, to Klockner-Humboldt-Deutz AG. Method for leaching and precipitating metal values from solids. 4,248,628, Cl. 75-101.00R.
Esser, Hans J.; and Dunphy, Gerald F., to Ogden Industries Pty. Limited. Deadlocking mechanism. 4,248,068, Cl. 70-134.000.
Esteves, Mabel R., to Sylvania Circuit Breaker Corporation. Apparatus for variably adjusting a magnetic level with a translating spring force. 4,249,151, Cl. 335-176.000.
Estradier, Francoise: *See*—
Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, 4,248,591, Cl. 132-7.000.
Etablissements Pierre Angenieux: *See*—
Masson, Andre, 4,249,204, Cl. 358-55.000.
Ethyl Corporation: *See*—
Keblys, Kestutis A., 4,248,850, Cl. 423-491.000.
Malec, Robert E., 4,248,182, Cl. 123-1.00A.
Evans, Maurice, to Aero-Motive Manufacturing Company. Conveyor trolleys. 4,248,157, Cl. 105-154.000.
Everett, Charles H. Support for violin or similar string instrument. 4,248,125, Cl. 84-280.000.
Excaliber, Incorporated: *See*—
Swinton, Walter C., 4,247,967, Cl. 24-143.00R.
Exxon Production Research Company: *See*—
Mifsud, Joseph F., 4,248,324, Cl. 181-121.000.
Exxon Research & Engineering Co.: *See*—
Coulaloglou, Costas A.; and Siegell, Jeffrey H., 4,247,987, Cl. 34-1.000.
Coupland, Keith; Smith, Clinton R.; and Salva, Juan M., 4,248,720, Cl. 252-42.700.
Malachesky, Paul A., 4,248,946, Cl. 429-197.000.
Vadekar, Mohan, 4,248,705, Cl. 210-680.000.
Fa. Ingeborg Niess Elektromedizinische Apparate: *See*—
Niess, Eduard; and Hoffmann, Heiner, 4,248,243, Cl. 128-696.000.
Fabridyne, Inc.: *See*—
Cook, William H., 4,248,994, Cl. 528-60.000.
Fabuss, Bela M.: *See*—
Paterson, Malcolm M.; and Fabuss, Bela M., 4,248,700, Cl. 209-212.000.
Falinower, Charles, to Ciments Lafarge France. Weighing device and installation for volumetric analysis of a sample. 4,248,315, Cl. 177-50.000.
Fan, John C. C., to Massachusetts Institute of Technology. Method of forming transparent heat mirrors on polymeric substrates. 4,248,687, Cl. 204-192.00P.
Fan, John C. C.: *See*—
Bozler, Carl O.; Chapman, Ralph L.; Fan, John C. C.; and McClelland, Robert W., 4,248,675, Cl. 204-38.00A.
Fansteel Inc.: *See*—
Kraemer, Rolf H., 4,248,553, Cl. 407-114.000.
Farmer, D. Eugene. Anemometer. 4,248,082, Cl. 73-170.00R.
Farrell, Thomas D., to General Electric Company. Breech-assembled igniter device. 4,249,103, Cl. 313-135.000.
Farrow, Ivan J.: *See*—
Cleary, William; and Farrow, Ivan J., 4,248,027, Cl. 53-244.000.
Fascetti, Eugenio: *See*—
Viglia, Aurelio; Fascetti, Eugenio; Perricone, Elena; and Degen, Ludwig, 4,248,967, Cl. 435-106.000.
Fasciati, Alfred: *See*—
Hurter, Rudolf; and Fasciati, Alfred, 4,248,773, Cl. 260-148.000.
Fauner, Gerhard. Torsion shear apparatus. 4,248,097, Cl. 73-842.000.
Faust, Raimund J., to Hoechst Aktiengesellschaft. Photopolymerizable mixture containing polyurethanes. 4,248,958, Cl. 430-288.000.
Faust, Raimund J.: *See*—
Jeffers, William; Seeley, Douglas; Faust, Raimund J.; and Liu, Shuchen, 4,248,959, Cl. 430-300.000.
Favorite Plastic Corporation: *See*—
Del Pozo, Albert J., Jr., 4,248,031, Cl. 53-556.000.
Favreau, Jean: *See*—
Hennart, Claude; Martin, Georges; and Favreau, Jean, 4,249,029, Cl. 585-638.000.
Fayolle, Bernard, to Rhone-Poulenc Industries. Process for the production of alkylaromatic copolyesters. 4,248,995, Cl. 528-171.000.
Felizardo, Manuel I.: *See*—
Villanueva, Juan T.; and Felizardo, Manuel I., 4,249,084, Cl. 290-53.000.
Fenimore, David C. Method for preparing samples for application to a thin layer chromatographic sheet. 4,248,904, Cl. 427-2.000.
Fenk, Josef, to Siemens Aktiengesellschaft. Tunable microwave oscillator. 4,249,262, Cl. 455-333.000.
Ferdinand, Fritz: *See*—
Weber, Heinrich; Dungs, Horst; Ferdinand, Fritz; Brasseur, Yves; and Birscheidt, Henri, 4,248,603, Cl. 44-10.00J.
Fernalld, Clifford S., Jr., to Mead Corporation, The. Ink jet printer having improved deflection electrode. 4,249,189, Cl. 346-75.000.
Fernandez, Avelino; Glass, Josef; and Osegowitsch, Viktor, to AGFA-Gevaert, A.G. Developing apparatus. 4,248,515, Cl. 354-321.000.
Ferrario, Renzo: *See*—
Papa, Sisto S.; and Ferrario, Renzo, 4,248,776, Cl. 260-173.000.
Ferris, Michael J.; Meyer, Burton C.; Hicks, Alan A.; and Arias, Henry, to Marvin Glass & Associates. Toy motor vehicle. 4,248,009, Cl. 46-202.000.
Fertig, Joseph: *See*—
Blank, Izhak; and Fertig, Joseph, 4,248,855, Cl. 424-19.000.
Fest, Christa; Hoffmann, Hellmut; Hammann, Ingeborg; and Stendel, Wilhelm, to Bayer Aktiengesellschaft. Combating arthropods with N-(O-ethyl-S-n-propyl-thiophosphoryloxy)-naphthalimides. 4,248,866, Cl. 424-200.000.
Feuvray, Alain. Portable sign display device. 4,248,001, Cl. 40-602.000.
Fiber Industries, Inc.: *See*—
Alexander, David C.; and Meek, Vance R., 4,248,114, Cl. 83-347.000.
Fichot, Julie Y.; and Roesch, Alfred, to General Electric Company. Semiconductor package having strengthening and sealing upper chamber. 4,249,034, Cl. 174-52.00H.
Fiedler, William. Protective shield for a parking meter winding ring. 4,248,336, Cl. 194-97.00R.
Fields, Ellis K.: *See*—
Udovich, Carl A.; Paschke, Edward E.; and Fields, Ellis K., 4,248,998, Cl. 528-296.000.
Filice, Gary W.: *See*—
Easton, James L.; and Filice, Gary W., 4,248,425, Cl. 273-72.00A.
Filtrox Maschinenbau A.G.: *See*—
Meier, Josef, 4,248,713, Cl. 210-232.000.
Findeisen, Kurt: *See*—
de Cleur, Eckhard; Dhein, Rolf; Rudolph, Hans; Kreuder, Hans J.; Muller, Hanns P.; Schafer, Walter; Wagner, Kuno; and Findeisen, Kurt, 4,248,978, Cl. 525-124.000.
Firestone Tire & Rubber Company, The: *See*—
Halasa, Adel F., 4,248,988, Cl. 526-141.000.
Firmenich SA: *See*—
Escher, Sina D.; and Morris, Anthony F., 4,248,742, Cl. 252-522.00R.
Fischer, Charles M. Gas administration scavenging mask. 4,248,218, Cl. 128-204.180.
Fischer, David J.; Narske, Richard M.; Thomas, John C.; and Worthington, Edward J., Jr., to Universal Research and Development Corp. Stacked modules for anaerobic digestion. 4,248,972, Cl. 435-292.000.
Fischer, Gerhard; and Strocker, Gunter, to Gustav Schade Maschinenfabrik GmbH & Co. Gantry scraper. 4,248,339, Cl. 198-519.000.
Fischer, James R.: *See*—
McCloskey, Chester M.; Fischer, James R.; and Scott, Leonard F., 4,248,785, Cl. 260-326.50A.
Fischer, William H.; Cromer, Charles F.; Hess, Robert L.; and Berkebile, Lee E., to Electric Power Research Institute, Inc. High voltage plain break circuit interrupter. 4,249,049, Cl. 200-144.00R.
Fish, Harold D.: *See*—
Dennis, John R.; and Fish, Harold D., 4,248,087, Cl. 73-290.00V.
Fisher, Charles B.; and Fisher, Sidney T. Dual-modulation receiving apparatus. 4,249,039, Cl. 179-1.0GS.
Fisher, Charles B.; and Fisher, Sidney T. Amplifier with switched capacitors. 4,249,135, Cl. 330-10.000.
Fisher, Charles B.; and Fisher, Sidney T. Noise-reducing apparatus. 4,249,260, Cl. 455-296.000.
Fisher, Sidney T.: *See*—
Fisher, Charles B.; and Fisher, Sidney T., 4,249,039, Cl. 179-1.0GS.
Fisher, Charles B.; and Fisher, Sidney T., 4,249,135, Cl. 330-10.000.

Fisher, Charles B.; and Fisher, Sidney T., 4,249,260, Cl. 455-296.000.

Fitz, Forest G., Jr.: *See*—
Budzich, Mieczyslaw; and Fitz, Forest G., Jr., 4,248,353, Cl. 212-128.000.

Fitzgerald, Richard E.; and Grabowski, Dennis R., to Honeywell Inc. Heating and cooling thermostat with limiting action selected by the changeover switching apparatus. 4,249,155, Cl. 337-360.000.

Fitzpatrick, Thomas L. Basement floor drain and integral trap. 4,248,711, Cl. 210-163.000.

Flaig, Christian. Safety nut and method for making. 4,248,285, Cl. 411-246.000.

Fleming, Bruce I.: *See*—
Kubes, George J.; MacLeod, James M.; Fleming, Bruce I.; and Bolker, Henry I., 4,248,663, Cl. 162-72.000.

Fleming Fabrications Limited: *See*—
Carruthers, Thomas R., 4,248,378, Cl. 237-66.000.

Fleurier, Gerard, to Jaeger. Device for monitoring mean operating conditions. 4,249,242, Cl. 364-442.000.

Florida Data Corporation: *See*—
Bellinger, James E., 4,248,540, Cl. 400-124.000.

Flory, Donald M.: *See*—
Peeples, Denny L.; and Flory, Donald M., 4,248,135, Cl. 91-49.000.

Fluoroware, Inc.: *See*—
Johnson, Douglas M., 4,248,346, Cl. 206-334.000.

FMC Corporation: *See*—
Berkowitz, Sidney; Manganaro, James L.; and Juelke, Charles V., 4,247,988, Cl. 34-1.000.
Woods, Quentin T.; and Gerverdinck, William D., 4,248,032, Cl. 53-570.000.

Fochler, Helmut P.: *See*—
Pate, Harold T.; and Fochler, Helmut P., 4,248,459, Cl. 285-319.000.

Folkers, Charles L., to United States of America, Energy. CTR Fuel recovery system using regeneration of a molecular sieve drying bed. 4,248,607, Cl. 55-33.000.

Foller, Werner, to Gestra-KSB Vertriebsgesellschaft mbH & Co. KG. Thermally-controlled valve. 4,248,376, Cl. 236-58.000.

Follett Corporation: *See*—
Gosnell, Michael P., 4,248,276, Cl. 141-87.000.

Ford Motor Company: *See*—
Choma, Michael A.; Simko, Aladar O.; Schechter, Michael M.; and Wade, Wallace R., 4,248,193, Cl. 123-341.000.
Dick, Heinz, 4,249,232, Cl. 362-61.000.
Ludwig, Frank A.; and Higley, Lin R., 4,248,943, Cl. 429-104.000.

Forester, John. Preservative solutions containing sodium dehydroacetate with or without sodium borate decahydrate and/or disodium edetate. 4,248,634, Cl. 106-15.050.

Fornell, Robert M., to Unit Rig & Equipment Co. Vent accumulator for hydraulic integrator. 4,248,046, Cl. 60-567.000.

Forni, Luciano: *See*—
Goldblatt, Andre J.; Gillet, Andre J.; and Forni, Luciano, 4,248,622, Cl. 71-121.000.

Fortunko, Christopher M.: *See*—
Vasile, Carmine F.; Thompson, Robert B.; and Fortunko, Christopher M., 4,248,092, Cl. 73-643.000.

Foss, Mildred B. Machine embroidery hoop. 4,247,998, Cl. 38-102.200.

Foster Wheeler Energy Corporation: *See*—
Bonner, Stanley V., 4,248,179, Cl. 122-235.00C.

Foundation: The Research Institute for Special Inorganic Materials, The: *See*—
Yajima, Seishi; Okamura, Kiyohito; and Shishido, Toetsu, 4,248,814, Cl. 264-63.000.

Fournier, Richard W.: *See*—
Paulin, John M.; and Fournier, Richard W., 4,248,952, Cl. 430-62.000.

Fowler, Kenneth: *See*—
Dearling, Roy P., 4,248,059, Cl. 62-324.00D.

Fox, Barry C.: *See*—
Balyoz, John; Chang, Chi S.; Fox, Barry C.; Palmieri, John A.; Ghafghaichi, Majid; Jen, Teh-Sen; and Mooney, Donald B., 4,249,193, Cl. 357-40.000.

Fox, Daniel W. Illuminated disc-type throwing toy. 4,248,010, Cl. 46-228.000.

Fox, John, to Xerox Corporation. Sheet stacking apparatus. 4,248,413, Cl. 270-53.000.

Fox, Susan M.; and Gibson, David V., to Dulux Australia Ltd. Aqueous dispersion of polymers containing polar groups and amide groups with poly(alkylene oxide). 4,248,754, Cl. 260-29.60E.

Foxboro Company, The: *See*—
McGown, James B.; and Root, Ernest F., 4,248,088, Cl. 73-319.000.

Fradenburgh, Evan A., to United Technologies Corporation. Helicopter blade. 4,248,572, Cl. 416-228.000.

Fraleigh, Ronald M.; and Marinik, James A., to Dow Corning Corporation. Siloxane elastomers containing manganous oxide. 4,248,768, Cl. 260-45.75R.

Francis, Robert L.: *See*—
Dunn, Neil C.; Francis, Robert L.; and Smith, Harold E., 4,248,249, Cl. 130-27.00T.

Franckowiak, Gerhard: *See*—
Bossert, Friedrich; Franckowiak, Gerhard; Heise, Arend; Kazda, Stanislav; Meyer, Horst; Stoepel, Kurt; Towart, Robertson; and Wehinger, Egbert, 4,248,873, Cl. 424-256.000.

Frank, Arlen W., to United States of America, Agriculture. Tris(N-carbalkoxylaminomethyl)phosphine oxides and sulfides. 4,249,017, Cl. 560-148.000.

Frank, Karl. Method for the manufacture of workpieces in particular fan blades, complete fan rotors and other bodies. 4,248,817, Cl. 264-102.000.

Franklin, Lloyd C.: *See*—
Rosen, Marvin; and Franklin, Lloyd C., 4,248,792, Cl. 260-404.500.

Franklin, Paul R., Jr. CO_2 Charged cooling unit. 4,248,060, Cl. 62-387.000.

Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H.: *See*—
Theurer, Josef, 4,248,154, Cl. 104-7.00B.
Theurer, Josef, 4,248,155, Cl. 104-12.000.

Fred H. Weber Co., Inc.: *See*—
Weber, Fred H., 4,248,826, Cl. 264-328.140.

Freeman, Norman L., Jr., to Halliburton Services. Adjustable relief valve. 4,248,265, Cl. 137-494.000.

Frey, Louis A.: *See*—
Hollstein, Thomas E.; Crum, Gerald W.; and Frey, Louis A., 4,248,379, Cl. 239-1.000.

Fridrich, Elmer G., to General Electric Company. Method and apparatus for dispensing salt powder as pellets in lamp making. 4,248,584, Cl. 425-553.000.

Frieberg, Robert J., to United Technologies Corporation. Closed loop resonator feedback system. 4,249,140, Cl. 331-94.50C.

Friedberg, Marvin P., to Cascade Pacific Lumber Company. Rung fitting for playground equipment. 4,248,418, Cl. 272-62.000.

Friedland, Harry: *See*—
Langill, Addison W., Jr.; and Friedland, Harry, 4,248,263, Cl. 137-454.200.

Frisbee, Claude M.; and Horsch, Rudolf, to J. I. Case Company. Side shift blade arrangement. 4,248,311, Cl. 172-819.000.

Frost, George W., Jr.: *See*—
Tung, Chi F.; and Frost, George W., Jr., 4,248,932, Cl. 428-325.000.

Fry, William E.: *See*—
Wernli, Walter L.; Fry, William E.; and Janda, Steve F., 4,248,741, Cl. 252-463.000.

Fryberg, Mario: *See*—
Hagen, Remon; and Fryberg, Mario, 4,248,961, Cl. 430-381.000.

Fuchigami, Yoshio; and Nakashima, Toshihide, to Kuraray Co., Ltd. Fibrous adsorbent for hemoperfusion. 4,248,736, Cl. 252-428.000.

Fuchs, Hugo; Brand, Uwe; and Horn, Peter, to BASF Aktiengesellschaft. Preparation of ε-caprolactam by catalytic rearrangement of cyclohexanone-oxime. 4,248,782, Cl. 260-239.30A.

Fuchs, Hugo: *See*—
Horn, Peter; and Fuchs, Hugo, 4,248,781, Cl. 260-239.30A.

Fuhrmann, Wilhelm; and Sofranko, Andrew J., to Schloemann-Siemag, Inc. Axial roll adjustment for a rolling mill. 4,248,074, Cl. 72-247.000.

Fuji Photo Film Co., Ltd.: *See*—
Hara, Hiroshi; Nakamura, Kotaro; and Suzuki, Yoshiaki, 4,248,949, Cl. 430-17.000.
Kitajima, Masao; Kondo, Asaji; and Arai, Fuminori, 4,248,829, Cl. 422-56.000.

Fujii, Shin; Ohkawa, Koue; and Seino, Takashi, to Nissan Motor Company, Limited. Binder composition for foundry sand containing zinc carbonate dispersed in resin. 4,248,974, Cl. 521-91.000.

Fujii, Yozo; and Yamaguchi, Hiromichi, to Sumitomo Chemical Company, Limited. Process for producing 2-amino-4-acylaminophenyl ether. 4,248,794, Cl. 564-133.000.

Fujimoto, Sakae, to Ricoh Company, Ltd. Sheet feed mechanism comprising one-rotation clutch and suction foot assembly. 4,248,417, Cl. 271-98.000.

Fujioka, Tadashi: *See*—
Nomura, Hirokazu; and Fujioka, Tadashi, 4,248,372, Cl. 228-32.000.

Fujita, Tatsuo: *See*—
Baba, Takaaki; Kitani, Teruo; Nakazawa, Masao; Yoshino, Hirokazu; Fujita, Tatsuo; and Tsuboka, Eiichi, 4,249,211, Cl. 358-183.000.

Fujitsu Limited: *See*—
Shinoda, Tsutae; Yoshikawa, Kazuo; and Andoh, Shizuo, 4,249,104, Cl. 313-188.000.

Fujiyoshi, Toshimitsu: *See*—
Akatsu, Toshio; Kinoshita, Kazuto; and Fujiyoshi, Toshimitsu, 4,248,095, Cl. 73-771.000.

Fukuoka, Yohei: *See*—
Tamura, Nobuhiro; Fukuoka, Yohei; Yamamatsu, Setsuo; Suzuki, Yoshio; Mitsui, Ryoichi; and Ibuki, Tadayuki, 4,249,019, Cl. 560-208.000.

Fukutake, Tsuyoshi: *See*—
Tamura, Sakae; Okabe, Kyoji; Fukutake, Tsuyoshi; Taguchi, Seiji; Nagai, Tamotsu; Saino, Mitsuo; and Iwamura, Tadaaki, 4,248,625, Cl. 75-41.000.

Fulton, Theodore A., to Bell Telephone Laboratories, Incorporated. Relaxation oscillation logic in Josephson junction circuits. 4,249,094, Cl. 307-277.000.

Fur, Nick. Systems for the storage and retrieval of items and apparatus therefor. 4,248,563, Cl. 414-280.000.

Furuichi, Katsushi: *See*—
Sato, Tadashi; and Furuichi, Katsushi, 4,248,529, Cl. 355-41.000.

Furuta, Osamu: *See*—
Hasegawa, Yoshimichi; and Furuta, Osamu, 4,248,072, Cl. 72-8.000.

Furuya, Kunitaka: *See*—
Sano, Shoichi; and Furuya, Kunitaka, 4,248,410, Cl. 267-60.000.

G.A.O. Gesellschaft fur Automation und Organisation mbH: *See*—
Maurer, Thomas; Groettrup, Helmut; and Helmrich, Harald, 4,249,163, Cl. 340-149.00A.

Gaeddert, Melvin V., to Hesston Corporation. Interlacing twine wrapping mechanism for rotary balers. 4,248,143, Cl. 100-5.000.

Gaffney, Edward N., to Lucas Industries Limited. Electric vehicle with displaceable battery pack. 4,248,323, Cl. 180-291.000.

Gallin, Paul G., to Art Cap Company, Inc. Uniform cap with changeable cover. 4,247,958, Cl. 2-187.000.

Galyan, Boris A.: *See*—
Paton, Boris E.; Lebedev, Vladimir K.; Kuchuk-Yatsenko, Sergei I.; Sakharnov, Vasily A.; Galyan, Boris A.; Dobrovolsky, Stanislav D.; and Sidorenko, Mikhail N., 4,249,153, Cl. 336-82.000.

Gamburd, Samuel. Flying toy. 4,248,007, Cl. 46-79.000.

Gardlund, Zachariah G.: *See*—
Laverty, John J.; and Gardlund, Zachariah G., 4,248,979, Cl. 525-129.000.

Garrett Corporation, The: *See*—
Egli, Hans; Byrne, Joe L.; and Nancarrow, James H., 4,248,567, Cl. 415-53.00T.

Gartner, Helmut M.; Petvai, Steve I.; Sarkary, Homi G.; and Schnitzel, Randolph H., to International Business Machines Corporation. Ion milling of thin metal films. 4,248,688, Cl. 204-192.00E.

Gatton, James W. Hand held light having belt carrying clip and belt mounting sheath therefor. 4,249,233, Cl. 362-103.000.

Gatzke, Erich: *See*—
Steigerwald, Wolf-Erhard; Ambros, Peter; and Gatzke, Erich, 4,248,921, Cl. 428-148.000.

Gaun, Viktor A.: *See*—
Petukhov, Vadim D.; Gaun, Viktor A.; and Bobrov, Oleg I., 4,248,133, Cl. 91-20.000.

Gearhart-Owen Industries, Inc.: *See*—
Hallmark, Bobby J., 4,248,081, Cl. 73-151.000.

General Corporation, The: *See*—
Yaguchi, Shoji, 4,248,057, Cl. 62-280.000.

General Electric Company: *See*—
Allen, Malcolm H., Jr.; and Buzzell, Colby E., 4,248,099, Cl. 73-861.360.
Bovenkerk, Harold P.; and DeVries, Robert C., 4,248,606, Cl. 51-307.000.
Buzzell, Colby E., 4,248,100, Cl. 73-861.360.
Clausen, Edward M., 4,248,369, Cl. 225-2.000.
Cushing, Donald S., 4,249,090, Cl. 307-154.000.
Dixon, Robert C.; Graf, Walter A., Jr.; and Sponseller, David R., 4,248,668, Cl. 176-30.000.
Farrell, Thomas D., 4,249,103, Cl. 313-135.000.
Fichot, Julie Y.; and Roesch, Alfred, 4,249,034, Cl. 174-52.00H.
Fridrich, Elmer G., 4,248,584, Cl. 425-553.000.
Kast, Howard B., 4,248,040, Cl. 60-39.270.
Kleba, Ronald J.; and Bednarski, Stanislaw H., 4,249,088, Cl. 307-87.000.
Smith, Chester A., 4,247,978, Cl. 29-596.000.
Thompson, Robert A.; and Wang, Hsin-Pang, 4,248,094, Cl. 73-760.000.

General Foam Plastics Corp.: *See*—
Chase, Ascher, 4,248,916, Cl. 428-8.000.

General Motors Corporation: *See*—
Chapman, Dennis C.; and Sayre, David T., 4,248.566, Cl. 415-26.000.
Harvey, Douglas J., 4,248,905, Cl. 427-11.000.
Laverty, John J.; and Gardlund, Zachariah G., 4,248,979, Cl. 525-129.000.
Livers, Gerald D.; Schafer, Douglas R.; and Thiele, Walter E., 4,249,046, Cl. 200-61.45R.
MacManus, Daniel C., 4,249,056, Cl. 200-1.00B.
Micheli, Adolph L., 4,249,156, Cl. 338-34.000.
Peeples, Denny L.; and Flory, Donald M., 4,248,135, Cl. 91-49.000.
Savage, Jack W.; and Carpenter, Keith H., 4,248,383, Cl. 239-284.00A.
Thebert, Glenn W., 4,248,569, Cl. 415-138.000.

General Signal Corporation: *See*—
Bachle, Walter W., 4,248,490, Cl. 339-14.00R.

General Tire & Rubber Company, The: *See*—
Reed, Thomas F., 4,248,275, Cl. 141-4.000.

Genie, Guy V. Apparatus for extracting with a liquid products which are part of solids. 4,248,835, Cl. 422-272.000.

Gentile, Ralph; and Lercher, John S., to Eastman Kodak Company. Method and apparatus for opening a film cartridge. 4,248,564, Cl. 414-412.000.

Gentili, Claudio; Mantellina, Calogero; and Scotti, Alessandro, to Honeywell Information Systems Italia. Memory with selective intervention error checking and correcting device. 4,249,253, Cl. 371-38.000.

Georg Schlegel, Firma: *See*—
Schlegel, Eberhard; and Krugel, Manfred, 4,249,057, Cl. 200-296.000.

George, John B.: *See*—
Wolford, James J.; and George, John B., 4,249,089, Cl. 307-140.000.

Georges, Michael P. Automatic microscope slide. 4,248,498, Cl. 350-90.000.

Georgia Tech Research Institute: *See*—
Craven, Tyson S., 4,249,258, Cl. 455-115.000.

Georgopoulos, George, to Westinghouse Electric Corp. Tackable sound absorptive panel. 4,248,325, Cl. 181-284.000.

Geray, Franz: *See*—
Deutschmann, Herbert; and Geray, Franz, 4,248,198, Cl. 123-559.000.

Gerber, Howard L., to Continental Group, Inc., The. Magnetic bonding of tabs. 4,248,653, Cl. 156-272.000.

Gerber, Jacobus J.: *See*—
Williams, Charles S.; and Gerber, Jacobus J., 4,248,843, Cl. 423-321.00R.

Gerigk, Gunter; Klendauer, Wolfgang; Pietruck, Horst; and Hammer, Klaus-Dieter, to Hoechst Aktiengesellschaft. Process for preparing packaging material suitable for sausage casings. 4,248,912, Cl. 427-230.000.

Gerigk, Gunter: *See*—
Hammer, Klaus-Dieter; Gerigk, Gunter; and Bytzek, Max, 4,248,900, Cl. 426-105.000.

Gerverdinck, William D.: *See*—
Woods, Quentin T.; and Gerverdinck, William D., 4,248,032, Cl. 53-570.000.

Gesellschaft fur Biotechnologische Forschung mbH: *See*—
Bauermeister, Gerd D., 4,248,712, Cl. 204-195.00P.

Gestra-KSB Vertriebsgesellschaft mbH & Co. KG: *See*—
Foller, Werner, 4,248,376, Cl. 236-58.000.

Gewerkschaft Eisenhutte Westfalia: *See*—
Stoltefuss, Wilhelm, 4,248,481, Cl. 299-33.000.
Truszczinski, Helmet, 4,248,482, Cl. 299-34.000.

Ghafghaichi, Majid: *See*—
Balyoz, John; Chang, Chi S.; Fox, Barry C.; Palmieri, John A.; Ghafghaichi, Majid; Jen, Teh-Sen; and Mooney, Donald B., 4,249,193, Cl. 357-40.000.

Giaimo, Anthony; MacInnes, John R.; and Larsen, Robert H., to Singer Company, The. Intermittently operable needle thread snubber. 4,248,169, Cl. 112-255.000.

Giammarco, Giuseppe; and Giammarco, Paolo. Process for purifying liquids and/or regenerating absorbent solutions. 4,248,608, Cl. 55-43.000.

Giammarco, Paolo: *See*—
Giammarco, Giuseppe; and Giammarco, Paolo, 4,248,608, Cl. 55-43.000.

Gianna, Roberto: *See*—
Marconi, Walter; Bartoli, Francesco; Gianna, Roberto; Morisi, Franco; and Spotorno, Giuseppina, 4,248,704, Cl. 210-632.000.

Gibson, David V.: *See*—
Fox, Susan M.; and Gibson, David V., 4,248,754, Cl. 260-29.60E.

Gidaspow, Dimitri; Lee, Chang H.; and Wasan, Darsh T., to United States of America, Energy. Cross flow electrofilter and method. 4,248,686, Cl. 204-184.000.

Giessner, Frank: *See*—
Bader, Leonhard; Giessner, Frank; Pechinger, Ernst; Rombach, Friedrich B.; Ruprich, Wilhelm; Weber, Helmut; and Winter, Hermann, 4,248,823, Cl. 264-156.000.

Gigante, John. Method for making a denture. 4,248,807, Cl. 264-18.000.

Gilbert, Earl F., to Westvaco Corporation. Corner post with integral lock. 4,248,350, Cl. 206-586.000.

Gilleland, Randall C.: *See*—
Bell, Oliver A., Jr.; Gilleland, Randall C.; and Chance, Davey J., 4,249,059, Cl. 219-69.00G.

Gillet, Andre J.: *See*—
Goldblatt, Andre J.; Gillet, Andre J.; and Forni, Luciano, 4,248,622, Cl. 71-121.000.

Gillette Company, The: *See*—
Diederich, Walter J., 4,248,208, Cl. 126-409.000.

Ginder, Harold B.: *See*—
Day, Arthur D., III; and Ginder, Harold B., 4,248,055, Cl. 62-196.00C.

Ginsburg, David; Mayer, Wilfried J. W.; and Wexler, Allan, to Miles Laboratories, Inc. Synthesis of citric acid or citrates. 4,249,018, Cl. 560-180.000.

Ginsburg, Milton. Method of making foam filled cushion toilet seat. 4,248,646, Cl. 156-78.000.

Gipson, Donald G. Hook unit for truck tire chains. 4,248,399, Cl. 248-552.000.

Girling Limited: *See*—
Klassen, Horst W., 4,248,328, Cl. 188-73.300.

Giuffrida, Sebastian J.: *See*—
Cotter, Thomas N.; Carter, Robert L.; and Giuffrida, Sebastian J., 4,248,454, Cl. 280-668.000.

Glasmatec AG: *See*—
Hofmann, Fritz, 4,248,656, Cl. 156-358.000.

Glass, Josef: *See*—
Fernandez, Avelino; Glass, Josef; and Osegowitsch, Viktor, 4,248,515, Cl. 354-321.000.

Glavis, Frank J.; and Clemens, David H., to Rohm and Haas Company. Preparation, polymerization, and use of new bis-vinylbenzyl nitrogenous monomers. 4,248,797, Cl. 564-288.000.

Glenn, William E., to New York Institute of Technology. Apparatus for ultrasonically imaging a body. 4,248,090, Cl. 73-620.000.

Glintz, Georgia E. Disposable stretcher care sheet. 4,248,216, Cl. 128-132.00D.

Glocker, Edwin M. Material spreader. 4,248,539, Cl. 366-341.000.

Glover, Edward: *See*—
Dearling, Roy P., 4,248,059, Cl. 62-324.00D.

Gluck, Julius, to Pitney Bowes Inc. Automatic lamp shutdown circuit. 4,249,111, Cl. 315-360.000.

Gluck, Otto: *See*—
Stuiber, Walter; Gluck, Otto; and Schicketanz, Rudolf, 4,248,542, Cl. 400-298.000.

Glyco Chemicals, Inc.: *See*—
Rosen, Marvin; and Franklin, Lloyd C., 4,248,792, Cl. 260-404.500.

Goettl Bros. Metal Products, Inc.: *See*—
Budzynski, John V.; and James, Donald A., 4,248,294, Cl. 165-104.00S.

Goettler, Lloyd A., to Monsanto Company. Preparing a composite of wood pulp dispersed in a polymeric matrix. 4,248,743, Cl. 260-17.4BB.

Goldblatt, Andre J.; Gillet, Andre J.; and Forni, Luciano, to Chimac Societe Anonyme. Derivatives of 9-fluorenone and the use thereof as herbicide. 4,248,622, Cl. 71-121.000.

Goldman, Holliday L., to Allis-Chalmers Corporation. Dual seal butterfly valve. 4,248,404, Cl. 251-307.000.

Golick, Leonard R., to Westinghouse Electric Corp. Set-up method for steam generator tube installation apparatus. 4,247,974, Cl. 29-407.000.

Goodchild, William: *See*—
Eberle, Gernot; Walker, Anthony R.; Goodchild, William; and Humbert-Droz, Patrice L. D., 4,249,180, Cl. 375-2.000.

Goodin, Richard D.; Hallcher, Richard C.; and Baizer, Manuel M., to Monsanto Company. Alkylating of nitrogen acids using electrogenerated bases as catalysts. 4,248,678, Cl. 204-59.00R.

Goodyear Tire & Rubber Company, The: *See*—
Butler, Kim D.; Young, Ray A.; and Brown, Alfred L., 4,248,348, Cl. 206-447.000.
Curtiss, Walter W., Jr.; and Rye, Grover W., 4,248,286, Cl. 152-158.000.
Lal, Joginder; and Smith, Richard R., 4,248,986, Cl. 525-359.000.

Gorille, Ingo, to Robert Bosch GmbH. Apparatus for controlling the duty factor of sequence of cyclically occurring pulses controlling flow through an impedance. 4,248,195, Cl. 123-416.000.

Gorin, Everett: *See*—
Theodore, Frank W.; Wasson, George E.; Jasulaitis, William A.; and Gorin, Everett, 4,248,669, Cl. 201-6.000.

Gosnell, Michael P., to Follett Corporation. Ice dispenser with anti-jamming means. 4,248,276, Cl. 141-87.000.

Goss, Clinton G., to Sun Electric Corporation. Dwell measuring apparatus. 4,249,130, Cl. 324-386.000.

Gosteli, Jacques, to Ciba-Geigy Corporation. Process for the preparation of 5-substituted resorcinols and related intermediates. 4,249,027, Cl. 568-763.000.

Gould Inc.: *See*—
McConnell, Lorne D., 4,249,126, Cl. 324-52.000.

Goward, George W.; Grey, Delton A.; and Krutenat, Richard C., to United Technologies Corporation. Thermal barrier coating for nickel and cobalt base super alloys. 4,248,940, Cl. 428-633.000.

Graat, Johannes W.; and Remie, Hans T., to Holec Gas Generators. Apparatus for producing inert combustion gases. 4,248,806, Cl. 261-118.000.

Grable, Jack W., to Emerson Electric Co. Temperature responsive electrical switching device and method of calibrating. 4,249,154, Cl. 337-360.000.

Grabowski, Dennis R.: *See*—
Fitzgerald, Richard E.; and Grabowski, Dennis R., 4,249,155, Cl. 337-360.000.

Graf, Ronald E. Uncharged ink drop rastering, monitoring, and control. 4,249,188, Cl. 346-75.000.

Graf, Walter A., Jr.: *See*—
Dixon, Robert C.; Graf, Walter A., Jr.; and Sponseller, David R., 4,248,668, Cl. 176-30.000.

Graham, Alan A.: *See*—
Shortway, Harry A.; Graham, Alan A.; and Miller, Charles H., 4,248,922, Cl. 428-159.000.

Grajek, Stanley A.: *See*—
Klaiber, George S.; Grajek, Stanley A.; and Hill, Robert S., 4,248,124, Cl. 84-192.000.

Grandfils, Pierre: *See*—
Blanpain, Guy; and Grandfils, Pierre, 4,248,136, Cl. 91-305.000.

Granger, Steven T., to Thompson Marine Corporation. Gas diffuser, aerator, or sparger method. 4,248,707, Cl. 210-695.000.

Grant, Patrick M.: *See*—
Mirzadeh, Saed; Whipple, Richard E.; Grant, Patrick M.; and O'Brien, Harold A., Jr., 4,248,730, Cl. 252-301.10R.

Grapin, Georges M.: *See*—
Grapin, Pierre A.; and Grapin, Georges M., 4,247,996, Cl. 36-103.000.

Grapin, Pierre A.; and Grapin, Georges M. Walking aid device. 4,247,996, Cl. 36-103.000.

Graves, Clarence C. Round bale handling device. 4,248,561, Cl. 414-24.500.

Great Lakes Carbon Corporation: *See*—
Ramsey, David E., Jr.; and Grindstaff, Lloyd I., 4,248,844, Cl. 423-345.000.

Great Lakes Chemical Corp.: *See*—
Sanders, David C., 4,249,024, Cl. 568-608.000.

Green, Augustus H., Jr.: *See*—
Belrose, Floyd M.; and Green, Augustus H., Jr., 4,249,175, Cl. 343-5.0EM.

Greenbaum, Sheldon. Receptacle to transport and display an artist's framed canvas. 4,248,000, Cl. 40-530.000.

Gregg, Leon E.: *See*—
Aberle, Gary F.; Balm, Gerald J.; Berstis, Viktors; Gregg, Leon E.; Hu, Kuang-Chi; Ranweiler, James G.; Richardson, William C.; Schardt, Terry L.; and Watson, Charles T., 4,249,241, Cl. 364-200.000.

Gregory, Jack T. Jaw for riveter. 4,248,077, Cl. 72-391.000.

Greiner, Richard W., to Hercules Incorporated. Heat fusible poly(vinyl acetate) dispersions. 4,248,746, Cl. 260-23.0AR.

Grey, Delton A.: *See*—
Goward, George W.; Grey, Delton A.; and Krutenat, Richard C., 4,248,940, Cl. 428-633.000.

Griepentrog, Dal F., to RCA Corporation. Continuous tuning arrangement for a multiband television receiver. 4,249,132, Cl. 455-180.000.

Griepentrog, Dal F.: *See*—
Molinari, Thomas E.; and Griepentrog, Dal F., 4,249,256, Cl. 455-180.000.

Griffin, Paul E.: *See*—
Van Huisen, Allan T.; and Griffin, Paul E., 4,248,306, Cl. 166-305.00R.

Grigsby, Gilbert R. Fluid injection apparatus for use with vehicles having on-board compressed air systems. 4,248,190, Cl. 123-180.00R.

Grindstaff, Lloyd I.: *See*—
Ramsey, David E., Jr.; and Grindstaff, Lloyd I., 4,248,844, Cl. 423-345.000.

Groettrup, Helmut: *See*—
Maurer, Thomas; Groettrup, Helmut; and Helmrich, Harald, 4,249,163, Cl. 340-149.00A.

Gronholm, Richard A., to Westinghouse Electric Corp. Dynamoelectric machine having uniformly circumferentially displaceable stator core. 4,249,097, Cl. 310-51.000.

Grooters, James D., to Pako Corporation. Self-threading photographic processor. 4,248,516, Cl. 354-321.000.

Gross, Raymond J.: *See*—
Sims, Larry A.; Lambert, Gerard L.; Gross, Raymond J.; and Collins, Harold B., 4,248,426, Cl. 273-108.000.

Grow Group, Inc.: *See*—
Williams, Charles E., 4,248,937, Cl. 428-414.000.

GTE Laboratories Incorporated: *See*—
Kilichowski, Kurt B., 4,249,107, Cl. 313-479.000.

GTE Products Corporation: *See*—
Colville, William T.; Mecone, David W.; and Hartman, Donald W., 4,249,230, Cl. 362-13.000.
Wolfe, Robert W., 4,249,108, Cl. 313-486.000.

Gude, Fritz; and Brandt, Siegfried, to Veba-Chemie Aktiengesellschaft. Securing substrates together with melt adhesives based on polyamides. 4,248,654, Cl. 156-331.000.

Guenther, Kenneth L.: *See*—
Erikson, Rolf B.; Zemke, Edward H.; and Guenther, Kenneth L., 4,249,187, Cl. 346-75.000.

Guenthert, Paul: *See*—
Henning, Georg; and Guenthert, Paul, 4,248,635, Cl. 106-22.000.

Guglielmetti, Leonardo, to Ciba-Geigy Corporation. Process for the manufacture of 1,4-disubstituted bicyclic or tricyclic compounds and new 1,4-disubstituted bicyclic compounds. 4,249,022, Cl. 562-488.000.

Guley, Paul C.; DeNeale, Richard J.; and Milosovich, George, to American Home Products Corporation. Sustained release pharmaceutical compositions. 4,248,856, Cl. 424-21.000.

Guley, Paul C.; DeNeale, Richard J.; and Milosovich, George, to American Home Products Corporation. Sustained release pharmaceutical compositions. 4,248,858, Cl. 424-21.000.

Guley, Paul C.: *See*—
DeNeale, Richard J.; Guley, Paul C.; and Milosovich, George, 4,248,857, Cl. 424-21.000.

Gulf Oil Corporation: *See*—
Marcyniuk, Orest P., 4,248,585, Cl. 431-202.000.

Gulf & Western Manufacturing Company: *See*—
Miller, David D., 4,249,070, Cl. 235-92.00T.

Gustav Schade Maschinenfabrik GmbH & Co.: *See*—
Fischer, Gerhard; and Strocker, Gunter, 4,248,339, Cl. 198-519.000.

Gutschik, Ernst: *See*—
Wandel, Martin; Engelhard, Helmut; Gutschik, Ernst; Reichardt, Manfred; and Christoph, Geert, 4,248,934, Cl. 428-374.000.

H. H. Robertson Company: *See*—
Dyer, Frederick W., 4,248,021, Cl. 52-404.000.

Haaker, Clarence R.: *See*—
Boucher, August S.; and Haaker, Clarence R., 4,248,554, Cl. 408-97.000.

Haas, Peter; Blahak, Johannes; Mormann, Werner; and Kapps, Manfred, to Bayer Aktiengesellschaft. The production of polyurethane resins and laminates. 4,248,930, Cl. 428-315.000.

Haataja, Bruce A., to Michigan Technological University, Board of Control of. Method for molding apertures in molded wood products. 4,248,820, Cl. 264-113.000.

Hach Chemical Company: *See*—
Andersen, M. Leland, 4,249,069, Cl. 219-535.000.

Haddon, Robert C.; Kaplan, Martin L.; and Wudl, Fred, to Bell Telephone Laboratories, Incorporated. Conjugatively linked tetrathiafulvalenes and method for preparation thereof. 4,249,013, Cl. 549-35.000.

Hadsell, William R.; and Miyagishima, Tosh, to Hydril Company. Internal mud saver valve. 4,248,264, Cl. 137-454.200.

Haenen, Henricus W. G.; Hesselmann, Gerardus J. M.; and Needs, Howard C., to U.S. Philips Corporation. Gamma correction circuit for a video signal and television camera suitable therefor. 4,249,208, Cl. 358-164.000.

Hagen, Remon; and Fryberg, Mario, to Ciba-Geigy AG. Material for color photography. 4,248,961, Cl. 430-381.000.

Halasa, Adel F., to Firestone Tire & Rubber Company, The. Process for the preparation of cyclized polymeric dienes. 4,248,988, Cl. 526-141.000.

Hale, Ron G.: *See*—
Washecheck, Paul H.; and Hale, Ron G., 4,248,747, Cl. 260-23.0XA.

Hall, Charles P., to Monterey Manufacturing, Inc. Waveless waterbed mattress. 4,247,962, Cl. 5-450.000.

Hall, George R.; and Hall, Robert J., to Norlin Industries, Inc. Harmony recognition technique application. 4,248,118, Cl. 84-1.010.

Hall, John B.: *See*—
Sprecker, Mark A.; Kryschuk, John J.; and Hall, John B., 4,248,787, Cl. 260-338.000.
Hall, Robert J.: *See*—
Hall, George R.; and Hall, Robert J., 4,248,118, Cl. 84-1.010.
Hallcher, Richard C.: *See*—
Goodin, Richard D.; Hallcher, Richard C.; and Baizer, Manuel M., 4,248,678, Cl. 204-59.00R.
Halliburton Company: *See*—
Dennis, John R.; and Fish, Harold D., 4,248,087, Cl. 73-290.00V.
Halliburton Services: *See*—
Freeman, Norman L., Jr., 4,248,265, Cl. 137-494.000.
Hallmark, Bobby J., to Gearhart-Owen Industries, Inc. Tool for testing earth formations in boreholes. 4,248,081, Cl. 73-151.000.
Halsall, James R., to Imperial Chemical Industries Limited. Straight line mechanism. 4,248,103, Cl. 74-103.000.
Halstead, William M. Automobile door lock operating tool. 4,248,465, Cl. 294-19.00R.
Haluk, Michael I.: *See*—
Birks, Aleck M.; Haluk, Michael I.; and Rothenberg, Edward M., 4,248,576, Cl. 425-68.000.
Halvorsen, William J., to Consolidation Coal Company. Oil agglomeration process. 4,248,697, Cl. 209-5.000.
Hamburger Stahlwerke GmbH: *See*—
Papst, Gero; Ropke, Gunther; and Topfer, Hans J., deceased, 4,248,623, Cl. 75-35.000.
Hammann, Ingeborg: *See*—
Fest, Christa; Hoffmann, Hellmut; Hammann, Ingeborg; and Stendel, Wilhelm, 4,248,866, Cl. 424-200.000.
Hammer, Klaus-Dieter; Gerigk, Gunter; and Bytzek, Max, to Hoechst Aktiengesellschaft. Internally coated tubular casing and process for the manufacture thereof. 4,248,900, Cl. 426-105.000.
Hammer, Klaus-Dieter: *See*—
Gerigk, Gunter; Klendauer, Wolfgang; Pietruck, Horst; and Hammer, Klaus-Dieter, 4,248,912, Cl. 427-230.000.
Hand, William. Security system. 4,248,463, Cl. 292-340.000.
Handa, Kohichi: *See*—
Ohishi, Tetsu; Handa, Kohichi; and Ueno, Haruo, 4,248,985, Cl. 525-327.000.
Hanley, C. John; and Morris, Frank, to PepsiCo Inc. Recycling apparatus. 4,248,334, Cl. 194-4.00C.
Hann, Paul D.: *See*—
Chapman, Charles C.; and Hann, Paul D., 4,249,030, Cl. 585-716.000.
Hannah, Richard E.; and Kish, Robert S., to Kish, Robert S. Illuminated urethral catheter. 4,248,214, Cl. 128-7.000.
Hanrot, Jean-Pascal; and Volpeliere, Jacky, to Aluminum Pechiney. Bell-shaped device for apparatus for charging dusty materials. 4,248,277, Cl. 141-93.000.
Hansen, W. Robert; and Christensen, George C., to Porta Horse, Inc. Portable, board-gripping platform support. 4,248,326, Cl. 182-185.000.
Hanson, Gustaf H. Orthodontic bracket and arch wire. 4,248,588, Cl. 433-11.000.
Hara, Hiroshi; Nakamura, Kotaro; and Suzuki, Yoshiaki, to Fuji Photo Film Co., Ltd. Method for stabilizing organic substrate materials including photographic dye images against the action of light and a photographic material so stabilized. 4,248,949, Cl. 430-17.000.
Hardesty, Thomas K. C., to United States of America, Navy. Flood valve. 4,248,257, Cl. 137-68.00A.
Hardin, Joe D.: *See*—
Scarbrough, William L.; Norris, Jerry L.; and Hardin, Joe D., 4,248,305, Cl. 166-305.00D.
Haren, Doyle V.: *See*—
Hofle, Anatoli; and Haren, Doyle V., 4,248,309, Cl. 169-47.000.
Harman, R. Keith; and Patchell, John W., to Computing Devices Company. Perimeter surveillance system. 4,249,207, Cl. 358-108.000.
Harnisch, Horst, to Bayer Aktiengesellschaft. Naphthostyril dyestuffs. 4,249,010, Cl. 548-159.000.
Harper-Wyman Company: *See*—
Huff, Norman M.; and Horodeck, George T., 4,249,047, Cl. 200-61.860.
Harrison, David M., to Allied Chemical Corporation. Spinnerette. 4,248,581, Cl. 425-464.000.
Harrison, John; Allsopp, Frederick; and Elliott, Geoffrey, to Rolls-Royce Limited. Method for producing a composite structure. 4,248,649, Cl. 156-174.000.
Hart, Cullen P., to Caterpillar Tractor Co. Vehicle suspension system. 4,248,447, Cl. 280-112.00R.
Hartman, Donald W.: *See*—
Colville, William T.; Mecone, David W.; and Hartman, Donald W., 4,249,230, Cl. 362-13.000.
Hartness, Robert G.: *See*—
Hartness, Thomas P.; and Hartness, Robert G., 4,248,029, Cl. 53-248.000.
Hartness, Thomas P.; and Hartness, Robert G. Case packer loading device. 4,248,029, Cl. 53-248.000.
Harvey, Douglas J., to General Motors Corporation. Tin-base body solder. 4,248,905, Cl. 427-11.000.
Harwood, Leopold A.; and Wittmann, Erwin J., to RCA Corporation. Phase compensated controlled oscillator. 4,249,199, Cl. 358-19.000.
Hasegawa, Yoshimichi; and Furuta, Osamu, to Aichi Steel Works, Limited. Method of and apparatus for producing plate material having uniform width and lengthwise thickness variation. 4,248,072, Cl. 72-8.000.
Hashiguchi, Mutsuo, to Tokyo Shibaura Denki Kabushiki Kaisha. Ultrasonic pulse-echo apparatus. 4,248,091, Cl. 73-631.000.
Hashimoto, Masakatsu: *See*—
Mochida, Ei; Ogawa, Nobuhisa; Shinkai, Hiroyuki; and Hashimoto, Masakatsu, 4,248,965, Cl. 435-7.000.
Hashizume, Naoki: *See*—
Watanabe, Risaburo; Ohtani, Masami; and Hashizume, Naoki, 4,248,575, Cl. 418-93.000.
Haslett, Glenn M., to Caterpillar Tractor Co. Stabilized seal structure. 4,248,439, Cl. 277-84.000.
Hastings, Edward L. Litter and refuse retrieval device. 4,248,468, Cl. 294-1.0BA.
Hatanaka, Noriaki: *See*—
Aoi, Hajime; Tamura, Takashi; Koizumi, Makoto; Kunimi, Noboru; Enomoto, Minoru; and Hatanaka, Noriaki, 4,249,219, Cl. 360-46.000.
Hatori, Yukiyoshi: *See*—
Takeuchi, Yashuhisa; Hatori, Yukiyoshi; and Ohwada, Masatsugu, 4,248,156, Cl. 104-300.000.
Hattop, Peter H., to Alcan Aluminum Corporation. Method and apparatus for striping extruded polymer products. 4,248,824, Cl. 264-171.000.
Hattori, Yoshinori; Kawamura, Mitsuyoshi; and Matsuo, Yasushi, to NGK Spark Plug Co., Ltd. Process for producing high density sintered products. 4,248,813, Cl. 264-62.000.
Haussmann, Siegfried: *See*—
Bhongbhibhat, Wisnu; Boehringer, Andreas; Schmid, Hans-Dieter; Haussmann, Siegfried; and Ilic, Ivan, 4,249,099, Cl. 310-218.000.
Hawes, John E.: *See*—
Schofield, John A.; and Hawes, John E., 4,249,015, Cl. 560-1.000.
Hawley, Royal T.; Veale, John P.; and Odell, Jack L., II, to Western Gear Corporation. Workpiece conditioning grinder control system. 4,248,019, Cl. 51-45.000.
Hayashi, Mitsuhiro: *See*—
Kawano, Hitoshi; Ikemura, Kiyoshi; and Hayashi, Mitsuhiro, 4,249,063, Cl. 219-130.510.
Hayashi, Shigeyuki; and Isobe, Masao, to Nippon Oil Co., Ltd. Stripping-resistant asphalt compositions. 4,248,749, Cl. 260-28.5AS.
Hayes, Thomas J., to Blazon-Flexible Flyer, Inc. Dynamic self-resisting exercise chair. 4,248,420, Cl. 272-126.000.
Healy, Nigel A., to AECI Limited. Emulsion of a melt explosive composition. 4,248,644, Cl. 149-21.000.
Heaney, James J.: *See*—
Stromquist, Michael E.; and Heaney, James J., 4,248,015, Cl. 49-70.000.
Heckman, Russell W., to Owens-Illinois, Inc. Method for assembling plastic sleeve preforms and containers. 4,248,030, Cl. 53-397.000.
Hedke, Manfred; Roos, Uve-Volker; and Reuel, Hermann, to Bekum Maschinenfabrik GmbH. Blow-molding unit for synthetic plastic materials. 4,248,583, Cl. 425-541.000.
Hedstrom, Mark D., to Delta Promotions, Inc. Electronic insect killer. 4,248,005, Cl. 43-112.000.
Heider, John G.: *See*—
Kathawala, Faizulla G.; and Heider, John G., 4,248,893, Cl. 424-324.000.
Heijnen, Godefridus H. C.; and Molenaar, Arian, to U.S. Philips Corporation. Universal copper-plating solution. 4,248,633, Cl. 106-1.230.
Hein, Lehmann AG: *See*—
Wenzel, Theo, 4,248,701, Cl. 209-363.000.
Hein, Paul R.; Yang, Michael W.; Irvin, Robert A.; Bauer, Steven E.; and Orem, Roland L., to W. R. Grace & Co. Radiation responsive relief imageable plastic laminate. 4,248,960, Cl. 430-306.000.
Heinberg, Paul. Language teaching method and apparatus. 4,247,995, Cl. 434-185.000.
Heinmets, Ferdinand. Temperature measuring. 4,248,089, Cl. 73-356.000.
Heinrich, Hans: *See*—
Lange, Gottfried; and Heinrich, Hans, 4,249,078, Cl. 250-315.200.
Heise, Arend: *See*—
Bossert, Friedrich; Franckowiak, Gerhard; Heise, Arend; Kazda, Stanislav; Meyer, Horst; Stoepel, Kurt; Towart, Robertson; and Wehinger, Egbert, 4,248,873, Cl. 424-256.000.
Helmrich, Harald: *See*—
Maurer, Thomas; Groettrup, Helmut; and Helmrich, Harald, 4,249,163, Cl. 340-149.00A.
Hems, Roger: *See*—
Rowsell, David G.; Spring, David J.; and Hems, Roger, 4,248,859, Cl. 424-54.000.
Henderson, Wilmer P.: *See*—
King, Paul V.; Becher, Albert F.; and Henderson, Wilmer P., 4,248,342, Cl. 206-3.000.
Hendricks, Herman M. Duct outlet. 4,248,140, Cl. 98-41.00R.
Hendrixon, John L.; and Rositch, Robert R., to Sealed Power Corporation. Method of manufacturing a piston ring. 4,247,972, Cl. 29-156.630.
Henig, Sammy S., to Lockheed Electronics Co., Inc. Multiple request arbitration circuit. 4,249,093, Cl. 307-232.000.
Hennart, Claude; Martin, Georges; and Favreau, Jean, to Airwick Industries, Inc. Process for the preparation of higher alkenes. 4,249,029, Cl. 585-638.000.
Henning, Georg; and Guenthert, Paul, to BASF Aktiengesellschaft. High-hiding calcium color lakes having great full-shade brillance and improved lightfastness. 4,248,635, Cl. 106-22.000.
Henrick, Clive A., to Zoecon Corporation. Pyridyl esters and thiolesters of α-substituted unsaturated acids. 4,248,875, Cl. 424-263.000.

Henry, Jerry W., to National Service Industries, Inc. Apparatus for covering panels with sheet material. 4,248,657, Cl. 156-443.000.
Henry, Richard K.: *See—*
Seng, Stephen; Henry, Richard K.; Propster, Mark A.; and Hohman, Charles M., 4,248,615, Cl. 65-27.000.
Seng, Stephen; Henry, Richard K.; Propster, Mark A.; and Hohman, Charles M., 4,248,616, Cl. 65-335.000.
Hercules Incorporated: *See—*
Greiner, Richard W., 4,248,746, Cl. 260-23.0AR.
Parsons, Charles L., 4,248,939, Cl. 428-508.000.
Herczog, Andrew; and Murphy, James A., to Corning Glass Works. Surgical cutting instrument. 4,248,231, Cl. 128-303.140.
Hermes, Rudolf, to Osborn Manufacturing Corporation, The. Foundry molding machine and method. 4,248,290, Cl. 164-154.000.
Herrera, Jose L.: *See—*
Brown, Lee R.; Herrera, Jose L.; and Plumadore, John D., 4,248,521, Cl. 355-3.00R.
Herron, Vincent P.; and Shenk, Jay D., to Armstrong Cork Company. Method for producing acoustical ceiling tile faced with a smooth distortion free decorative thin plastic film. 4,248,647, Cl. 156-84.000.
Hertz, Claude M.: *See—*
Ronk, Leroy B.; and Hertz, Claude M., 4,249,237, Cl. 363-150.000.
Hess, Robert L.: *See—*
Fischer, William H.; Cromer, Charles F.; Hess, Robert L.; and Berkebile, Lee E., 4,249,049, Cl. 200-144.00R.
Hesselmann, Gerardus J. M.: *See—*
Haenen, Henricus W. G.; Hesselmann, Gerardus J. M.; and Needs, Howard C., 4,249,208, Cl. 358-164.000.
Hesston Corporation: *See—*
Gaeddert, Melvin V., 4,248,143, Cl. 100-5.000.
Hester, Thomas E., to Litton Systems, Inc. Transformer having novel multiple winding and support structure and method of making same. 4,249,229, Cl. 361-399.000.
Hewitt, Larry E.; and Popovich, David T., to B. F. Goodrich Company, The. Golf ball. 4,248,432, Cl. 273-235.00R.
Hickerson, Frederick R. Adjustable nozzle. 4,248,385, Cl. 239-444.000.
Hickox, Barbara. Electrical dynamo. 4,249,096, Cl. 310-15.000.
Hicks, Alan A.: *See—*
Ferris, Michael J.; Meyer, Burton C.; Hicks, Alan A.; and Arias, Henry, 4,248,009, Cl. 46-202.000.
Hicks, Richard S.: *See—*
Doyle, Earl N.; Trevino, Rene; and Hicks, Richard S., 4,248,811, Cl. 264-46.600.
Hidaka, Yoshiaki: *See—*
Kamezaki, Takashi; Hidaka, Yoshiaki; and Tahara, Tetsuo, 4,248,293, Cl. 165-51.000.
Hieda, Lester S.: *See—*
United States of America, National Aeronautics and Space Administration; and Hieda, Lester S., 4,249,116, Cl. 318-254.000.
Higley, Lin R.: *See—*
Ludwig, Frank A.; and Higley, Lin R., 4,248,943, Cl. 429-104.000.
Hijikata, Kazuo, to Olympus Optical Co., Ltd. Dual wavelength photometric device. 4,248,536, Cl. 356-416.000.
Hild, Danny L. Detachable conveyor bucket. 4,248,340, Cl. 198-711.000.
Hildebrand, Otto J. Sun-shade auxiliary device for vehicle. 4,248,473, Cl. 296-97.00G.
Hill, Geoffrey A.: *See—*
Crawford, John; and Hill, Geoffrey A., 4,248,725, Cl. 252-51.50A.
Hill, Richard N., to W. R. Grace & Co. Production of stabilized wet process phosphoric acid. 4,248,846, Cl. 423-317.000.
Hill, Robert S.: *See—*
Klaiber, George S.; Grajek, Stanley A.; and Hill, Robert S., 4,248,124, Cl. 84-192.000.
Himmelbauer, Erich E.; and Lohuis, Willem J., to U.S. Philips Corporation. Televison camera comprising a pick-up tube. 4,249,215, Cl. 358-217.000.
Hinachi, Matatoyo: *See—*
Oishi, Kazuo; Hinachi, Matatoyo; Matsui, Takeshi; and Kotera, Masao, 4,249,176, Cl. 343-6.5LC.
Hipp, James D., to Midland-Ross Corporation. Pivoted railway hopper car door latching mechanism. 4,248,159, Cl. 105-308.00R.
Hirai, Tadaaki: *See—*
Maruyama, Eiichi; Ataka, Saburo; Inao, Kiyohisa; Imamura, Yoshinori; Tsukada, Toshihisa; Takasaki, Yukio; and Hirai, Tadaaki, 4,249,106, Cl. 313-365.000.
Hitachi Koki Company, Limited: *See—*
Miyasaka, Masao; and Kobayashi, Tsuneki, 4,248,146, Cl. 101-93.030.
Hitachi, Ltd.: *See—*
Akatsu, Toshio; Kinoshita, Kazuto; and Fujiyoshi, Toshimitsu, 4,248,095, Cl. 73-771.000.
Aoi, Hajime; Tamura, Takashi; Koizumi, Makoto; Kunimi, Noboru; Enomoto, Minoru; and Hatanaka, Noriaki, 4,249,219, Cl. 360-46.000.
Imaide, Takuya; Kuroyanagi, Tomomitsu; and Masuda, Michio, 4,249,213, Cl. 358-183.000.
Maruyama, Eiichi; Ataka, Saburo; Inao, Kiyohisa; Imamura, Yoshinori; Tsukada, Toshihisa; Takasaki, Yukio; and Hirai, Tadaaki, 4,249,106, Cl. 313-365.000.
Oikawa, Mitsuru, 4,248,947, Cl. 430-5.000.
Omae, Tsutomu; and Matuta, Tosihiko, 4,249,236, Cl. 363-87.000.
Sasaki, Ryusei; Mori, Yasuki; and Morishita, Hirosada, 4,248,636, Cl. 106-23.000.
Shinkawa, Keiro; and Sodeyama, Chuichi, 4,249,263, Cl. 455-327.000.
Sugiura, Noboru; and Suda, Seiji, 4,248,200, Cl. 123-644.000.
Tsutsui, Mitsukuni; Yoshinari, Takashi; Iikubo, Toshiaki; Kawakami, Kazuhiko; and Sugiura, Noboru, 4,248,201, Cl. 123-647.000.
Uchikawa, Sadao; Izumi, Masayuki; Maruyama, Hiromi; and Takeda, Renzo, 4,248,667, Cl. 176-24.000.
Yamada, Kinsaku, 4,248,186, Cl. 123-568.000.
Yamagiwa, Akira, 4,249,091, Cl. 307-203.000.
Hodges, Marvin P.: *See—*
Buchroeder, Richard A., 4,249,205, Cl. 358-60.000.
Hoechst Aktiengesellschaft: *See—*
Faust, Raimund J., 4,248,958, Cl. 430-288.000.
Gerigk, Gunter; Klendauer, Wolfgang; Pietruck, Horst; and Hammer, Klaus-Dieter, 4,248,912, Cl. 427-230.000.
Hammer, Klaus-Dieter; Gerigk, Gunter; and Bytzek, Max, 4,248,900, Cl. 426-105.000.
Jaeger, Friedrich; and Lammers, Ludwig, 4,248,222, Cl. 128-207.150.
Lask, Helmut; and Holst, Arno, 4,248,595, Cl. 8-116.00P.
Mayer, Manfred; Noltner, Gerhard; Nowack, Rudolf; and Strobel, Wolfgang, 4,248,819, Cl. 264-109.000.
Niermann, Hermann; Reichert, Gunter; Ebert, Hans; and Neumann, Friedrich, 4,248,602, Cl. 23-293.00R.
Reinhardt, Friedrich, 4,248,593, Cl. 8-532.000.
Sander, Jurgen; Skaletz, Detlef; Buhr, Gerhard; and Lohaus, Gerhard, 4,248,957, Cl. 430-270.000.
Hoehn, Hans, to E. R. Squibb & Sons, Inc. Imidazole derivatives of 1,5,6,11-tetrahydrobenzo[5,6]cyclohepta[1,2-b]pyrazolo[4,3-e]pyridines. 4,248,878, Cl. 424-267.000.
Hoehn, Hans, to E. R. Squibb & Sons, Inc. Imidazolylethoxymethyl derivatives of pyrazole. 4,248,881, Cl. 424-273.00P.
Hoeschele, James D.; and Amundsen, Alan R., to Engelhard Minerals and Chemicals Corporation. Cis-diammineplatinum(II) orthophosphate complexes. 4,248,840, Cl. 423-302.000.
Hoffman, Jay, to Singer Company, The. Sewing machine arranged for edge following by needle movement. 4,248,168, Cl. 112-158.00E.
Hoffman, Joseph A.: *See—*
Tucker, Robert J.; and Hoffman, Joseph A., 4,248,594, Cl. 8-583.000.
Hoffmann, Heiner: *See—*
Niess, Eduard; and Hoffmann, Heiner, 4,248,243, Cl. 128-696.000.
Hoffmann, Hellmut: *See—*
Fest, Christa; Hoffmann, Hellmut; Hammann, Ingeborg; and Stendel, Wilhelm, 4,248,866, Cl. 424-200.000.
Hoffmann-La Roche Inc.: *See—*
Broger, Emil A., 4,249,023, Cl. 568-17.000.
Krasso, Anna; and Krebs, Ernst-Peter, 4,248,880, Cl. 424-270.000.
Hofle, Anatoli; and Haren, Doyle V., to Dayco Corporation. Fire extinguishing system utilizing the engine cooling system. 4,248,309, Cl. 169-47.000.
Hofmann, Fritz, to Glasmatec AG. Device for manufacturing an insulating glass plate. 4,248,656, Cl. 156-358.000.
Hofmeister, Hagen, to Licentia Patent-Verwaltungs-G.m.b.H. Timing frequency recovery. 4,249,252, Cl. 370-100.000.
Hohman, Charles M.: *See—*
Seng, Stephen; Henry, Richard K.; Propster, Mark A.; and Hohman, Charles M., 4,248,615, Cl. 65-27.000.
Seng, Stephen; Henry, Richard K.; Propster, Mark A.; and Hohman, Charles M., 4,248,616, Cl. 65-335.000.
Hohwart, George. Swimming apparatus. 4,248,419, Cl. 272-71.000.
Holec Gas Generators: *See—*
Graat, Johannes W.; and Remie, Hans T., 4,248,806, Cl. 261-118.000.
Holland Company: *See—*
Chierici, Osvaldo F.; and Murphy, Richard F., 4,248,158, Cl. 105-282.00R.
Hollstein, Thomas E.; Crum, Gerald W.; and Frey, Louis A., to Nordson Corporation. Powder spray color change system. 4,248,379, Cl. 239-1.000.
Holst, Arno: *See—*
Lask, Helmut; and Holst, Arno, 4,248,595, Cl. 8-116.00P.
Holzinger, Carl S.: *See—*
Purinton, Edwin C.; Auger, Robert L.; and Holzinger, Carl S., 4,249,167, Cl. 340-572.000.
Honda Giken Kogyo Kabushiki Kaisha: *See—*
Kamezaki, Takashi; Hidaka, Yoshiaki; and Tahara, Tetsuo, 4,248,293, Cl. 165-51.000.
Sano, Shoichi; and Furuya, Kunitaka, 4,248,410, Cl. 267-60.000.
Honeywell Inc.: *See—*
Fitzgerald, Richard E.; and Grabowski, Dennis R., 4,249,155, Cl. 337-360.000.
Schultz, Richard M., 4,249,166, Cl. 340-506.000.
Stauffer, Norman L.; and Wilwerding, Dennis J., 4,249,073, Cl. 250-204.000.
Whitney, John M., 4,248,375, Cl. 236-46.00R.
Honeywell Information Systems Inc.: *See—*
Watkins, Richard R.; Briggs, C. Steven; and Doyle, John M., Jr., 4,249,172, Cl. 340-726.000.
Honeywell Information Systems Italia: *See—*
Gentili, Claudio; Mantellina, Calogero; and Scotti, Alessandro, 4,249,253, Cl. 371-38.000.
Honma, Tsunetoshi: *See—*
Igarashi, Kikuo; and Honma, Tsunetoshi, 4,248,865, Cl. 424-180.000.
Hood Enterprises, Inc.: *See—*
Hood, Frederick E., 4,248,281, Cl. 114-106.000.

Hood, Frederick E., to Hood Enterprises, Inc. Roll-reefing jib sail. 4,248,281, Cl. 114-106.000.
Horiboto, Ryouichi: *See*—
Uehori, Tatsuo; and Horiboto, Ryouichi, 4,248,907, Cl. 427-127.000.
Horn, Jurgen: *See*—
Batz, Hans-Georg; Horn, Jurgen; Stellner, Klaus; Maier, Josef; Nelboeck-Hochstetter, Michael; and Weimann, Gunter, 4,248,786, Cl. 260-326.260.
Horn, Peter; and Fuchs, Hugo, to BASF Aktiengesellschaft. Purification of crude caprolactam. 4,248,781, Cl. 260-239.30A.
Horn, Peter: *See*—
Fuchs, Hugo; Brand, Uwe; and Horn, Peter, 4,248,782, Cl. 260-239.30A.
Hornibrook, Walter J.; and Lombardi, Ronald A., to Stauffer Chemical Company. Pressure sensitive products with decorative appearance. 4,248,762, Cl. 260-42.220.
Hornibrook, Walter J.; and Lombardi, Ronald A., to Stauffer Chemical Company. Pressure sensitive products with decorative appearance. 4,248,917, Cl. 428-40.000.
Hornibrook, Walter J.; and Lombardi, Ronald A., to Stauffer Chemical Company. Pressure sensitive products and adhesive formulations. 4,248,918, Cl. 428-40.000.
Horodeck, George T.: *See*—
Huff, Norman M.; and Horodeck, George T., 4,249,047, Cl. 200-61.860.
Horrobin, David F. Method for the treatment of anxiety. 4,248,872, Cl. 424-251.000.
Horsch, Rudolf: *See*—
Frisbee, Claude M.; and Horsch, Rudolf, 4,248,311, Cl. 172-819.000.
Hosoki, Kanoo: *See*—
Sawayama, Tadahiro; Kinugasa, Hiroaki; Nishimura, Haruki; Takeyama, Kunihiko; and Hosoki, Kanoo, 4,248,883, Cl. 424-274.000.
Hosoya, Minoru: *See*—
Maruta, Yoshio; and Hosoya, Minoru, 4,247,971, Cl. 29-4.50B.
Howden, Ashley G.: *See*—
Jones, Lawrence T.; Sims, Anson; Howden, Ashley G.; and Lee, Robert S., 4,248,006, Cl. 46-17.000.
Hozumi, Keiichi; Nishikaichi, Yuji; Ueda, Masao; Miura, Tatsuya; and Yamamoto, Hirotoshi, to Shin Meiwa Industry Co., Ltd. Apparatus and method for sensing welding point in automatic welding apparatus. 4,249,062, Cl. 219-124.340.
Hsia, Yukun, to McDonnell Douglas Corporation. Stripped nitride structure and process therefor. 4,249,191, Cl. 357-41.000.
Hsu, Sheng T., to RCA Corporation. Comparator, sense amplifier. 4,249,095, Cl. 307-350.000.
HTL Industries, Inc.: *See*—
Chuck, Ted, 4,248,080, Cl. 73-146.800.
Hu, Kuang-Chi: *See*—
Aberle, Gary F.; Balm, Gerald J.; Berstis, Viktors; Gregg, Leon E.; Hu, Kuang-Chi; Ranweiler, James G.; Richardson, William C.; Schardt, Terry L.; and Watson, Charles T., 4,249,241, Cl. 364-200.000.
Hubner, Michael: *See*—
Ponsold, Kurt; Hubner, Michael; and Oettell, Michael, 4,248,790, Cl. 260-397.400.
Huff, Norman M.; and Horodeck, George T., to Harper-Wyman Company. Gas valve-switch assembly. 4,249,047, Cl. 200-61.860.
Hughes, Terence C., to University of Melbourne, The. Decomposition bomb and clamp means. 4,248,831, Cl. 422-102.000.
Hughes Tool Company: *See*—
Cunningham, Robert A.; and Pessier, Rudolph C. O., 4,248,314, Cl. 175-344.000.
Hugl, Herbert; and Wolfrum, Gerhard, to Bayer Aktiengesellschaft. P-Sulphophenoxy-phenylazo indoles. 4,248,774, Cl. 260-165.000.
Huguenin, Freddy, to Ebauches S.A. Electrochromic display device. 4,248,503, Cl. 350-357.000.
Hukki, Risto T., to Kennedy Van Saun Corporation. Pneumatic classifier. 4,248,699, Cl. 209-144.000.
Humbert-Droz, Patrice L. D.: *See*—
Eberle, Gernot; Walker, Anthony R.; Goodchild, William; and Humbert-Droz, Patrice L. D., 4,249,180, Cl. 375-2.000.
Hunt, Thomas J., Jr., to Siemens Corporation. Method and apparatus for detecting railroad cars. 4,248,396, Cl. 246-247.000.
Hurst, Geoffrey J.; and Butler, Andrew W., to Marconi Instruments Limited. Controllable microwave attenuator. 4,249,144, Cl. 333-81.00R.
Hurter, Rudolf; and Fasciati, Alfred, to Ciba-Geigy Corporation. Acetoacetamide diazo dyestuffs. 4,248,773, Cl. 260-148.000.
Hutley, Ronald W. F.: *See*—
Mahoney, Frank A.; and Hutley, Ronald W. F., 4,248,148, Cl. 101-93.090.
Hybrid Energy Systems, Inc.: *See*—
Briley, Patrick B., 4,248,049, Cl. 62-2.000.
Hyde, Thomas G.: *See*—
Clubley, Brian G.; Davis, Boyce I. D.; Hyde, Thomas G.; Lamb, Frank; and Randell, Donald R., 4,248,976, Cl. 525-2.000.
Hydril Company: *See*—
Hadsell, William R.; and Miyagishima, Tosh, 4,248,264, Cl. 137-454.200.
Hydro, William R., to United States of America, Army. Novel process for synthesis of a liquid irritant, 1-methoxycycloheptratriene. 4,249,025, Cl. 568-667.000.
Hydrophilics International, Inc.: *See*—
Blank, Izhak; and Fertig, Joseph, 4,248,855, Cl. 424-19.000.
Hydrotile Canada Limited: *See*—
Christian, Alfred W., 4,248,580, Cl. 425-262.000.
Hylsa, S.A.: *See*—
Novoa, Jorge O. B.; and Ramirez, Julian S., 4,248,624, Cl. 75-41.000.
Ibuki, Tadayuki: *See*—
Tamura, Nobuhiro; Fukuoka, Yohei; Yamamatsu, Setsuo; Suzuki, Yoshio; Mitsui, Ryoichi; and Ibuki, Tadayuki, 4,249,019, Cl. 560-208.000.
ICI Australia Limited: *See*—
Serban, Alexander; Warner, Richard B.; and Watson, Keith G., 4,248,618, Cl. 71-92.000.
Serban, Alexander; Watson, Keith G.; and Warner, Richard B., 4,248,619, Cl. 71-92.000.
Idemitsu Petrochemical Co. Ltd.: *See*—
Tokumitsu, Ichiro, 4,248,834, Cl. 422-200.000.
Igarashi, Isao: *See*—
Noguchi, Masaaki; Tanaka, Yukiyasu; and Igarashi, Isao, 4,248,183, Cl. 123-51.00B.
Igarashi, Kikuo; and Honma, Tsunetoshi, to Shionogi & Co., Ltd. Novel aminoglycoside derivatives. 4,248,865, Cl. 424-180.000.
Igawa, Kazushige: *See*—
Murakami, Tsugio; Kikuchi, Mitsuo; and Igawa, Kazushige, 4,248,848, Cl. 423-474.000.
Ignatiev, Vladimir V.: *See*—
Basov, Nikolai G.; Berezhnoi, Igor A.; Vekshin, Vyacheslav S.; Danilychev, Vladimir A.; Elatontsev, Albert I.; Ignatiev, Vladimir V.; Karyshev, Vitaly D.; and Togulev, Alexandr K., 4,249,158, Cl. 340-26.000.
Igusa, Kazuo: *See*—
Ikushima, Heizi; Igusa, Kazuo; and Bessho, Sadao, 4,248,867, Cl. 424-236.000.
Ihara Chemical Industry Company, Limited: *See*—
Sato, Zenichi; Tabuchi, Fumiya; Takagi, Keiichiro; and Imamiya, Yoji, 4,248,779, Cl. 260-239.0BF.
Ihida, Kazuyoshi, to Toyo Ink Manufacturing Co., Ltd. Process for producing curable esterified alkyd resins. 4,248,997, Cl. 528-272.000.
Iida, Tetsuya: *See*—
Sakaue, Tatsuo; Suzuki, Yasoji; and Iida, Tetsuya, 4,249,145, Cl. 333-165.000.
Iikubo, Toshiaki: *See*—
Tsutsui, Mitsukuni; Yoshinari, Takashi; Iikubo, Toshiaki; Kawakami, Kazuhiko; and Sugiura, Noboru, 4,248,201, Cl. 123-647.000.
Ikeda, Tatsuhiko, to Terumo Corporation. Sampling needle protector. 4,248,246, Cl. 128-765.000.
Ikekawa, Nobuo: *See*—
DeLuca, Hector F.; Tanaka, Yoko; Ikekawa, Nobuo; and Kobayashi, Yoshiro, 4,248,791, Cl. 260-397.200.
Ikemura, Kiyoshi: *See*—
Kawano, Hitoshi; Ikemura, Kiyoshi; and Hayashi, Mitsuhiro, 4,249,063, Cl. 219-130.510.
Ikeya, Hirotoshi: *See*—
Yoshizumi, Akira; Ikeya, Hirotoshi; and Wada, Moriyasu, 4,248,920, Cl. 428-76.000.
Ikushima, Heizi; Igusa, Kazuo; and Bessho, Sadao, to Chugai Seiyaku Kabushiki Kaisha. Stabilized oily preparation of 1α-hydroxy-vitamin D and method for manufacturing the same. 4,248,867, Cl. 424-236.000.
Ilic, Ivan: *See*—
Bhongbhibhat, Wisnu; Boehringer, Andreas; Schmid, Hans-Dieter; Haussmann, Siegfried; and Ilic, Ivan, 4,249,099, Cl. 310-218.000.
Imaide, Takuya; Kuroyanagi, Tomomitsu; and Masuda, Michio, to Hitachi, Ltd. Picture-in-picture television receiver. 4,249,213, Cl. 358-183.000.
Imamiya, Yoji: *See*—
Sato, Zenichi; Tabuchi, Fumiya; Takagi, Keiichiro; and Imamiya, Yoji, 4,248,779, Cl. 260-239.0BF.
Imamura, Yoshinori: *See*—
Maruyama, Eiichi; Ataka, Saburo; Inao, Kiyohisa; Imamura, Yoshinori; Tsukada, Toshihisa; Takasaki, Yukio; and Hirai, Tadaaki, 4,249,106, Cl. 313-365.000.
Immler, Josef, to Siemens Aktiengesellschaft. Circuit arrangement for inexpensive production of three-phase current from dc current. 4,249,235, Cl. 363-2.000.
Impact Manufacturing Co., Inc.: *See*—
McClane, Robert A., 4,248,914, Cl. 427-282.000.
Imperial Chemical Industries Limited: *See*—
Halsall, James R., 4,248,103, Cl. 74-103.000.
Ina, Toshikazu: *See*—
Matsui, Takeshi; Kohama, Tokio; Kawai, Hisasi; Nishimatsu, Akira; Ina, Toshikazu; Nohira, Hidetaka; and Kobashi, Kiyoshi, 4,248,187, Cl. 123-568.000.
Inaba, Masao: *See*—
Ito, Yutaka; Inaba, Masao; Mizukami, Mineo; and Shimizu, Mikio, 4,249,198, Cl. 358-13.000.
Ito, Yutaka; Isomura, Yukihiko; Kato, Katsuhisa; Takahashi, Hiroshi; and Inaba, Masao, 4,249,212, Cl. 358-183.000.
Inamoto, Yoshiaki; Osugi, Motoyoshi; and Kashihara, Eiji, to Kao Soap Co., Ltd.; and Sumitomo Chemical Industries, Ltd. 1-(1-Aminoalkyl)-tricyclo[4,3,1,$1^{2,5}$]undecanes. 4,248,891, Cl. 424-316.000.

Inao, Kiyohisa: *See—*
Maruyama, Eiichi; Ataka, Saburo; Inao, Kiyohisa; Imamura, Yoshinori; Tsukada, Toshihisa; Takasaki, Yukio; and Hirai, Tadaaki, 4,249,106, Cl. 313-365.000.
Indian Head Inc.: *See—*
Pate, Harold T.; and Fochler, Helmut P., 4,248,459, Cl. 285-319.000.
Inland Steel Company: *See—*
Nickola, Richard A., 4,248,908, Cl. 427-156.000.
Inmont Corporation: *See—*
Civardi, Frank P.; Sova, Stanley G.; and Burachinsky, Bohdan V., 4,248,652, Cl. 156-219.000.
Masar, Edward J.; Oberg, David J.; and Williams, Ralph A., 4,248,744, Cl. 260-17.4SG.
Innothera: *See—*
Robba, Max F.; and Aurousseau, Michel, 4,249,014, Cl. 549-49.000.
Inoue Gomu Kogyo Kabushiki Kaisha: *See—*
Katoh, Hisanori, 4,248,933, Cl. 428-339.000.
Institutul de Cercetari Textile: *See—*
Ciobanu, Pia; Pop, Ioan; and Virlan, Grigore, 4,248,923, Cl. 428-197.000.
Interface Mechanisms, Inc.: *See—*
Real, Kenneth G., 4,248,151, Cl. 101-288.000.
Interlake, Inc.: *See—*
Armour, Frank K., 4,248,407, Cl. 266-156.000.
International Business Machines Corporation: *See—*
Aberle, Gary F.; Balm, Gerald J.; Berstis, Viktors; Gregg, Leon E.; Hu, Kuang-Chi; Ranweiler, James G.; Richardson, William C.; Schardt, Terry L.; and Watson, Charles T., 4,249,241, Cl. 364-200.000.
Balyoz, John; Chang, Chi S.; Fox, Barry C.; Palmieri, John A.; Ghafghaichi, Majid; Jen, Teh-Sen; and Mooney, Donald B., 4,249,193, Cl. 357-40.000.
Gartner, Helmut M.; Petvai, Steve I.; Sarkary, Homi G.; and Schnitzel, Randolph H., 4,248,688, Cl. 204-192.00E.
Korte, Eugene C.; and Rayburn, Karen C., 4,249,217, Cl. 358-294.000.
International Flavors & Fragrances Inc.: *See—*
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,248,250, Cl. 131-17.00R.
Sprecker, Mark A.; Kryschuk, John J.; and Hall, John B., 4,248,787, Cl. 260-338.000.
International Harvester Company: *See—*
Dunn, Neil C.; Francis, Robert L.; and Smith, Harold E., 4,248,249, Cl. 130-27.00T.
International Power Technology, Inc.: *See—*
Cheng, Dah Y., 4,248,039, Cl. 60-39.050.
International Standard Electric Corporation: *See—*
Poole, Leonard A., 4,248,541, Cl. 400-144.200.
International Telephone & Telegraph Corporation: *See—*
Kaupisch, Kurt F.; Bennett, Douglas W.; and Katzen, Raphael, 4,248,842, Cl. 423-242.000.
Salman, Syed, 4,248,931, Cl. 428-315.000.
InterTechnology/Solar Corporation: *See—*
Mehta, Gurmukh D., 4,247,991, Cl. 34-35.000.
Irie, Yutaka: *See—*
Doi, Yasuhiko; Shimizu, Shigemitsu; Matsui, Toshio; Kawai, Yoshihisa; Irie, Yutaka; Suzuki, Norihiko; and Iwao, Soichi, 4,248,523, Cl. 355-13.000.
Irvin, Robert A.: *See—*
Hein, Paul R.; Yang, Michael W.; Irvin, Robert A.; Bauer, Steven E.; and Orem, Roland L., 4,248,960, Cl. 430-306.000.
Irving, Robert. Method of filtering sewer scum and apparatus therefor. 4,248,709, Cl. 210-769.000.
Isheim, Maynard C., to Envirotech Corporation. Sludge drying system with sand recycle. 4,248,164, Cl. 110-225.000.
Ishibashi, Saburo: *See—*
Saito, Shunjiro; Ishibashi, Saburo; and Shimojo, Nobuei, 4,248,906, Cl. 427-125.000.
Ishimaru, Takenori: *See—*
Kanamaru, Tsuneo; Ishimaru, Takenori; and Okazaki, Hisayoshi, 4,248,892, Cl. 424-317.000.
Isobe, Masao: *See—*
Hayashi, Shigeyuki; and Isobe, Masao, 4,248,749, Cl. 260-28.5AS.
Isomura, Yukihiko: *See—*
Ito, Yutaka; Isomura, Yukihiko; Kato, Katsuhisa; Takahashi, Hiroshi; and Inaba, Masao, 4,249,212, Cl. 358-183.000.
Itek Corporation: *See—*
Albertinetti, Nedo P.; and Aldrich, Ralph E., 4,248,504, Cl. 350-360.000.
Robbins, Daniel H., 4,248,512, Cl. 354-275.000.
Ito, Ichizo: *See—*
Sawayama, Takehiro; Ito, Ichizo; Aga, Toshio; and Ando, Tetsuo, 4,248,098, Cl. 73-861.240.
Ito, Yutaka; Inaba, Masao; Mizukami, Mineo; and Shimizu, Mikio, to Nippon Electric Co., Ltd.; and Tokyo Broadcasting System Inc. Phase locking system for television signals. 4,249,198, Cl. 358-13.000.
Ito, Yutaka; Isomura, Yukihiko; Kato, Katsuhisa; Takahashi, Hiroshi; and Inaba, Masao, to Tokyo Broadcasting System Inc.; and Nippon Electric Co., Ltd. Television picture special effects system using digital memory techniques. 4,249,212, Cl. 358-183.000.
ITT Industries, Inc.: *See—*
Schulz, Egon; and Dolega, Ulrich, 4,249,192, Cl. 357-38.000.
Iwamura, Tadaaki: *See—*
Tamura, Sakae; Okabe, Kyoji; Fukutake, Tsuyoshi; Taguchi, Seiji; Nagai, Tamotsu; Saino, Mitsuo; and Iwamura, Tadaaki, 4,248,625, Cl. 75-41.000.
Iwanaga, Kazuyoshi; Sugano, Kazuhiko; and Ohtsuka, Kunio, to Nissan Motor Company, Limited. First-second gear shift valve of hydraulic transmission control system. 4,248,106, Cl. 74-868.000.
Iwanaga, Kazuyoshi, to Nissan Motor Company, Limited. Capping of automatic transmission governor case. 4,248,262, Cl. 137-382.000.
Iwao, Soichi: *See—*
Doi, Yasuhiko; Shimizu, Shigemitsu; Matsui, Toshio; Kawai, Yoshihisa; Irie, Yutaka; Suzuki, Norihiko; and Iwao, Soichi, 4,248,523, Cl. 355-13.000.
Iwasaki, Koichi, to Sony Corporation. Recording and/or reproducing apparatus for reducing tape vibration. 4,249,222, Cl. 360-130.230.
Iwata, Kouji: *See—*
Negi, Youji; Iwata, Kouji; and Sakai, Kazuhiko, 4,248,991, Cl. 526-331.000.
Izumi, Masayuki: *See—*
Uchikawa, Sadao; Izumi, Masayuki; Maruyama, Hiromi; and Takeda, Renzo, 4,248,667, Cl. 176-24.000.
J. I. Case Company: *See—*
Frisbee, Claude M.; and Horsch, Rudolf, 4,248,311, Cl. 172-819.000.
J. M. Huber Corporation: *See—*
Almagro, Guillermo A., 4,248,600, Cl. 23-293.00R.
J. Tennant & Sons (Warrington) Limited: *See—*
Cooper, Charles F., 4,248,586, Cl. 431-328.000.
Jachowski, Ronald E., to Decibel Products, Inc. Cubical multiple cavity filter and combiner. 4,249,148, Cl. 333-208.000.
Jackson, Harold P.; and Rhinehart, Richard W., to McDonough Power Equipment, Division of Fuqua Industries, Inc. Adjustable axle support system for lawn mower. 4,248,034, Cl. 56-17.200.
Jacobs, Clyde L.: *See—*
Sullivan, Robert P.; and Jacobs, Clyde L., 4,248,180, Cl. 122-390.000.
Jacobs, Kenneth P. Portable ski equipment carrier. 4,248,365, Cl. 224-45.00S.
Jaeger: *See—*
Fleurier, Gerard, 4,249,242, Cl. 364-442.000.
Jaeger, Friedrich; and Lammers, Ludwig, to Hoechst Aktiengesellschaft. Endotracheal tube having a relief valve. 4,248,222, Cl. 128-207.150.
Jakabhazy, Stephen Z.; and Zeman, Leos J., to Abcor, Inc. Process for preparing a membrane. 4,248,913, Cl. 427-244.000.
Jakobs, Willy; and Caspelherr, Heinz, to Klockner-Humboldt-Deutz AG. Method for smoothing the surface of bar material. 4,248,556, Cl. 409-131.000.
Jakobsen, Jakob S., to Danfoss A/S. Controllable heating means for small masses, particularly the expansion medium in heat setting apparatuses. 4,248,377, Cl. 236-68.00B.
Jamak, Inc.: *See—*
Micallef, Alfred M., 4,248,017, Cl. 49-493.000.
James D. Easton, Inc.: *See—*
Easton, James L.; and Filice, Gary W., 4,248,425, Cl. 273-72.00A.
James, Donald A.: *See—*
Budzynski, John V.; and James, Donald A., 4,248,294, Cl. 165-104.00S.
James, Leslie M. L.: *See—*
Barber, Alvan W.; and James, Leslie M. L., 4,248,189, Cl. 123-169.0PA.
James River Graphics Inc.: *See—*
Brown, Lee R.; Herrera, Jose L.; and Plumadore, John D., 4,248,521, Cl. 355-3.00R.
Paulin, John M.; and Fournier, Richard W., 4,248,952, Cl. 430-62.000.
Janda, Steve F.: *See—*
Wernli, Walter L.; Fry, William E.; and Janda, Steve F., 4,248,741, Cl. 252-465.000.
Jansson, Conny; Erlandsson, Lars; and Appelkvist, Rolf, to AB Bahco Verktyg. Wire retainer and diagonal cutting nipper with wire retainer. 4,247,983, Cl. 30-124.000.
Japan Exlan Company Limited: *See—*
Kobashi, Toshiyuki; Ozaki, Masahiko; and Abe, Noboru, 4,248,812, Cl. 264-51.000.
Jarmul, Seymour. Compact thermal energy reservoirs. 4,248,291, Cl. 165-4.000.
Jasulaitis, William A.: *See—*
Theodore, Frank W.; Wasson, George E.; Jasulaitis, William A.; and Gorin, Everett, 4,248,669, Cl. 201-6.000.
Jaulmes, Christian, to Ateliers de la Motobecane. Security device for fuel tank cap of a two-wheeled vehicle. 4,248,322, Cl. 180-287.000.
Jaulmes, Eric. Two-cycle engine with pure air scavenging. 4,248,185, Cl. 123-73.00R.
Jaworski, Eugene; and Breslow, Jeffrey D., to Marvin Glass & Associates. Disc launcher. 4,248,202, Cl. 124-16.000.
Jean Claude Decaux Paris Publicite Abribus: *See—*
Decaux, Jean-Claude, 4,249,231, Cl. 362-31.000.
Jeffers, William; Seeley, Douglas; Faust, Raimund J.; and Liu, Shuchen, to American Hoechst Corporation. Preparation of diazo printing plates using laser exposure. 4,248,959, Cl. 430-300.000.
Jen, Teh-Sen: *See—*
Balyoz, John; Chang, Chi S.; Fox, Barry C.; Palmieri, John A.; Ghafghaichi, Majid; Jen, Teh-Sen; and Mooney, Donald B., 4,249,193, Cl. 357-40.000.

Jersey Nuclear-Avco Isotopes, Inc.: *See*—
McAllister, Gary L., 4,249,139, Cl. 331-94.50P.
Jewett, David N., to Mobil Tyco Solar Energy Corporation. Method for reducing residual stresses in crystals. 4,248,645, Cl. 156-601.000.
Jezek, Louis J., to Resources Conservation Company. Fluid distributor for condenser tubes. 4,248,296, Cl. 165-118.000.
Jinno, Takayuki; Kotake, Yasuo; and Kikuchi, Toshihiro, to Dowa Mining Co., Ltd.; and Koken Boring Machine Co., Ltd. Method and apparatus for upwardly cutting full cutting face of a shaft without requesting workmen's hands. 4,248,312, Cl. 175-57.000.
Johansson, Ake A., to Linotek Oy. Method for washing of crude tall oil soap from the sulfate pulping process. 4,248,769, Cl. 260-97.700.
John Wyeth & Brother Ltd.: *See*—
Crossley, Roger, 4,249,012, Cl. 548-195.000.
White, Alan C., 4,248,876, Cl. 424-267.000.
Johnsen, Walter. Bow assembly for truck bed covers. 4,248,475, Cl. 296-100.000.
Johnson, Daryl D.: *See*—
McGrath, Joseph M.; and Johnson, Daryl D., 4,248,748, Cl. 260-27.00R.
Johnson, Douglas M., to Fluoroware, Inc. Shipping container for semiconductor substrate wafers. 4,248,346, Cl. 206-334.000.
Johnson, Herbert E. Label removal device. 4,248,660, Cl. 156-579.000.
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Beede, Charles H.; Waldman, Harold L.; and Blumig, Theodore, 4,248,685, Cl. 204-159.220.
Johnson, Lyle A.: *See*—
Adair, William A.; and Johnson, Lyle A., 4,248,161, Cl. 108-6.000.
Johnson, Philip C., to Dentsply Research & Development Corp. Steering mechanism for mobile carriage. 4,248,444, Cl. 280-47.110.
Johnston, Linda G.: *See*—
Baigrie, Brian D.; Bailey, Joseph; Johnston, Linda G.; and Mijovic, Miroslav V., 4,248,956, Cl. 430-225.000.
Jones, James W. Double venous cannula. 4,248,224, Cl. 128-214.00R.
Jones, Lawrence: *See*—
Kirby, James S.; Jones, Lawrence; Moe, Walter; and Diker, Charles M., 4,248,012, Cl. 46-262.000.
Jones, Lawrence T.; Sims, Anson; Howden, Ashley G.; and Lee, Robert S., to California R & D Center. Reconfigurable moving animal simulating toy. 4,248,006, Cl. 46-17.000.
Jones, Robert C., to American Home Products Corporation. Reproduction control. 4,248,864, Cl. 424-177.000.
Jones, Stanley M.: *See*—
Womack, Robert R., 4,248,211, Cl. 126-446.000.
Joseph, Raymond, to Ateliers Reunis S.A. Control handlebar for transport or handling carts. 4,248,441, Cl. 280-33.99A.
Joseph, Simon P. Heart stimulating apparatus. 4,248,238, Cl. 128-419.0PG.
Joyal Products, Inc.: *See*—
Mangan, John P.; and Riordan, Edward D., 4,249,068, Cl. 219-497.000.
Juda, Walter: *See*—
Lindstrom, Robert; Allen, Robert J.; and Juda, Walter, 4,248,682, Cl. 204-114.000.
Judkins, Ren. Aerial projectile. 4,248,424, Cl. 273-60.00B.
Juelke, Charles V.: *See*—
Berkowitz, Sidney; Manganaro, James L.; and Juelke, Charles V., 4,247,988, Cl. 34-1.000.
Juhala, Pentti J.: *See*—
Kaartinen, Niilo H.; and Juhala, Pentti J., 4,248,259, Cl. 137-334.000.
Jung, Han-Joo: *See*—
Park, Sae-Soon; and Jung, Han-Joo, 4,249,234, Cl. 362-228.000.
Jyohoku Seiko Co., Ltd.: *See*—
Maejima, Mokichi, 4,248,579, Cl. 425-227.000.
Kaartinen, Niilo H.; and Juhala, Pentti J., to Packard Instrument Company, Inc. Fluid flow control device. 4,248,259, Cl. 137-334.000.
Kabushiki Kaisha Komatsu Seisakusho: *See*—
Toda, Eiji, 4,248,479, Cl. 297-378.000.
Uehara, Kazuo; Tohma, Hideaki; and Sato, Yoshito, 4,248,573, Cl. 417-216.000.
Uehara, Kazuo; Tohma, Hideaki; and Sato, Yoshito, 4,248,574, Cl. 417-216.000.
Kabushiki Tokai-Rika-Denki Seisakusho: *See*—
Motonami, Masanao; Yasumatsu, Jun; and Kubota, Tatsushi, 4,248,456, Cl. 280-802.000.
Kaegebein, Daniel P., to TX RX Systems Inc. Cavity filter and multicoupler utilizing same. 4,249,147, Cl. 333-202.000.
Kagiwada, Reynold S.: *See*—
Yen, Kuo-Hsiung; Lau, Kei-Fung; and Kagiwada, Reynold S., 4,249,146, Cl. 333-195.000.
Kahn, Marvin L.: *See*—
Eapen, Kuttikandathil E.; and Kahn, Marvin L., 4,248,902, Cl. 426-332.000.
Kailis, Peter G.: *See*—
Welsh, William C.; and Kailis, Peter G., 4,248,362, Cl. 222-505.000.
Kaiser Electro Refractaire France: *See*—
Blackburn, James B.; and Randon, Jean L., 4,248,815, Cl. 264-71.000.
Kakigi, Takao: *See*—
Kakigi, Yasugi; and Kakigi, Takao, 4,249,082, Cl. 250-574.000.
Kakigi, Yasugi; and Kakigi, Takao, to Cybernet Electronics Corporation. Photoelectric smoke sensor box. 4,249,082, Cl. 250-574.000.
Kali-Chemie AG: *See*—
Derleth, Helmut; Walter, Ludwig; Bretz, Karl-Heinrich; and Kurs, Artur, 4,248,847, Cl. 423-329.000.
Kallies, Karl-Heinz; and Winkler, Manfred, to Veb Arzneimittelwerk Dresden. Device for microbiological testing. 4,248,830, Cl. 422-59.000.
Kallies, Karl-Heinz, to Veb Arzneimittelwerk Dresden. Capillary tube indicator for the determination of urea concentrations. 4,248,973, Cl. 435-296.000.
Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, to L'Oreal. Indoanilines, process for producing the same and keratinic fiber dye composition containing the same. 4,248,591, Cl. 132-7.000.
Kamber, Peter W.: *See*—
Larsen, Hals N.; and Kamber, Peter W., 4,248,042, Cl. 60-243.000.
Kameda, Tamotsu. Lifting jack. 4,248,405, Cl. 254-10.00B.
Kamegaya, Takeo; Matsuzaki, Hideomi; Kaneko, Ryuichi; and Yokozawa, Minori, to Nippon Hoso Kyokai. Gas-discharge display panel. 4,249,105, Cl. 313-213.000.
Kamezaki, Takashi; Hidaka, Yoshiaki; and Tahara, Tetsuo, to Honda Giken Kogyo Kabushiki Kaisha. Apparatus for cooling engine oil. 4,248,293, Cl. 165-51.000.
Kamiide, Mareyasu: *See*—
Yomota, Junji; Kurashina, Fumiaki; Kamiide, Mareyasu; and Takita, Ichiro, 4,248,638, Cl. 106-56.000.
Kaminskas, Vitautas A.: *See*—
Vasiliev, Petr E.; Klimavichjus, Prantsishkus-Algirdas R.; Kondratiev, Alexandr V.; Matsjukyavichjus, Juozas J.; Beksha, Gabrieljus-Vitautas L.; and Kaminskas, Vitautas A., 4,249,100, Cl. 310-317.000.
Kamiya, Osamu, to Brother Kogyo Kabushiki Kaisha. Sewing machine attachment. 4,248,166, Cl. 112-122.000.
Kamiyoshi, Masaya: *See*—
Takata, Tadahiko; Kamiyoshi, Masaya; and Tanaka, Satoshi, 4,248,938, Cl. 428-414.000.
Kamo, Seiichi; Watanabe, Tetzuo; and Nakayama, Kiyoshi, to Mitsubishi Chemical Industries Limited. Process for producing granular basic phosphate fertilizer. 4,248,617, Cl. 71-42.000.
Kanamaru, Tsuneo; Ishimaru, Takenori; and Okazaki, Hisayoshi, to Takeda Chemical Industries, Ltd. Antifibrotic agent. 4,248,892, Cl. 424-317.000.
Kanda, Hajime, to Ricoh Company, Ltd. Facsimile transceiver apparatus. 4,249,216, Cl. 358-257.000.
Kaneko, Masakatsu: *See*—
Baba, Tsuneo; Kaneko, Masakatsu; Shimizu, Bunji; and Arakawa, Masao, 4,248,999, Cl. 536-4.000.
Kaneko, Ryuichi: *See*—
Kamegaya, Takeo; Matsuzaki, Hideomi; Kaneko, Ryuichi; and Yokozawa, Minori, 4,249,105, Cl. 313-213.000.
Kao Soap Co., Ltd.: *See*—
Inamoto, Yoshiaki; Osugi, Motoyoshi; and Kashihara, Eiji, 4,248,891, Cl. 424-316.000.
Maruta, Yoshio; and Hosoya, Minoru, 4,247,971, Cl. 29-4.50B.
Kaplan, Martin L.: *See*—
Haddon, Robert C.; Kaplan, Martin L.; and Wudl, Fred, 4,249,013, Cl. 549-35.000.
Kapps, Manfred: *See*—
Haas, Peter; Blahak, Johannes; Mormann, Werner; and Kapps, Manfred, 4,248,930, Cl. 428-315.000.
Karbowski, James P., to White's Electronics, Inc. Wide pulse gated metal detector with improved noise rejection. 4,249,128, Cl. 324-329.000.
Karl, Horst: *See*—
Stemme, Otto; Lermann, Peter; Schroeder, Rolf; and Karl, Horst, 4,248,511, Cl. 354-173.000.
Karl Lautenschlager KG, Mobelbeschlagfabrik: *See*—
Lautenschlager, Karl, 4,247,965, Cl. 16-145.000.
Karlen, Urs; and Kirschner, Horst, to BBC Brown, Boveri & Company, Limited. Squirrel-cage rotor structure for an asynchronous electrical motor. 4,249,098, Cl. 310-183.000.
Karyshev, Vitaly D.: *See*—
Basov, Nikolai G.; Berezhnoi, Igor A.; Vekshin, Vyacheslav S.; Danilychev, Vladimir A.; Elatontsev, Albert I.; Ignatiev, Vladimir V.; Karyshev, Vitaly D.; and Togulev, Alexandr K., 4,249,158, Cl. 340-26.000.
Kashihara, Eiji: *See*—
Inamoto, Yoshiaki; Osugi, Motoyoshi; and Kashihara, Eiji, 4,248,891, Cl. 424-316.000.
Kashirsky, Alexandr G.: *See*—
Tverskoi, David N.; Kashirsky, Alexandr G.; Sulie, Jury N.; and Trofimov, Dmitry N., 4,248,108, Cl. 82-2.00R.
Kast, Howard B., to General Electric Company. Integrated control system for a gas turbine engine. 4,248,040, Cl. 60-39.270.
Kathawala, Faizulla G.; and Heider, John G., to Sandoz, Inc. Arterial wall cholesterol ester reducing cyclopropanyl-bearing amides. 4,248,893, Cl. 424-324.000.
Kato, Katsuhisa: *See*—
Ito, Yutaka; Isomura, Yukihiko; Kato, Katsuhisa; Takahashi, Hiroshi; and Inaba, Masao, 4,249,212, Cl. 358-183.000.
Kato, Shozo, to Tokuyama Soda Kabushiki Kaisha. Process for producing alpha-aminocarboxylic acids and salts thereof. 4,248,677, Cl. 204-59.00R.
Kato, Yasuhiro; Sekiguchi, Nobuo; and Yosida, Sizuo, to Tokyo Shibaura Electric Co., Ltd. Enclosed switchboard having instruments needed for regular inspection and operation mounted on a middle level door. 4,249,227, Cl. 361-334.000.
Katoh, Hisanori, to Inoue Gomu Kogyo Kabushiki Kaisha. Synthetic resin window molding. 4,248,933, Cl. 428-339.000.

Katzen, Raphael: *See*—
Kaupisch, Kurt F.; Bennett, Douglas W.; and Katzen, Raphael, 4,248,842, Cl. 423-242.000.

Kaufman, Harold C.: *See*—
Woldy, Paul N.; Kaufman, Harold C.; Dach, Michael M.; and Beall, James F., 4,248,604, Cl. 48-197.00R.

Kaupisch, Kurt F.; Bennett, Douglas W.; and Katzen, Raphael, to International Telephone & Telegraph Corporation. Removal of contaminants and recovery of by-products from hot waste gas stream. 4,248,842, Cl. 423-242.000.

Kawai, Hisasi: *See*—
Matsui, Takeshi; Kohama, Tokio; Kawai, Hisasi; Nishimatsu, Akira; Ina, Toshikazu; Nohira, Hidetaka; and Kobashi, Kiyoshi, 4,248,187, Cl. 123-568.000.

Kawai, Yoshihisa: *See*—
Doi, Yasuhiko; Shimizu, Shigemitsu; Matsui, Toshio; Kawai, Yoshihisa; Irie, Yutaka; Suzuki, Norihiko; and Iwao, Soichi, 4,248,523, Cl. 355-13.000.

Kawakami, Kazuhiko: *See*—
Tsutsui, Mitsukuni; Yoshinari, Takashi; Iikubo, Toshiaki; Kawakami, Kazuhiko; and Sugiura, Noboru, 4,248,201, Cl. 123-647.000.

Kawamoto, Tamio: *See*—
Matsumoto, Toshinori; and Kawamoto, Tamio, 4,248,333, Cl. 192-0.052.

Kawamura, Mitsuyoshi: *See*—
Hattori, Yoshinori; Kawamura, Mitsuyoshi; and Matsuo, Yasushi, 4,248,813, Cl. 264-62.000.

Kawano, Hitoshi; Ikemura, Kiyoshi; and Hayashi, Mitsuhiro, to Shinko Electric Co., Ltd. Circuit for high frequency arc welding apparatus using a low frequency switch. 4,249,063, Cl. 219-130.510.

Kawasaki Steel Corporation: *See*—
Tamura, Sakae; Okabe, Kyoji; Fukutake, Tsuyoshi; Taguchi, Seiji; Nagai, Tamotsu; Saino, Mitsuo; and Iwamura, Tadaaki, 4,248,625, Cl. 75-41.000.

Kawashima, Syunichiro; Nishida, Masamitsu; Ueda, Ichiro; and Ouchi, Hiromu, to Matsushita Electric Industrial Co., Ltd. Dielectric ceramics. 4,248,727, Cl. 106-46.000.

Kaye, Lowell. Cosmetic pencil sharpener. 4,248,283, Cl. 145-3.310.

Kazda, Stanislav: *See*—
Bossert, Friedrich; Franckowiak, Gerhard; Heise, Arend; Kazda, Stanislav; Meyer, Horst; Stoepel, Kurt; Towart, Robertson; and Wehinger, Egbert, 4,248,873, Cl. 424-256.000.

Kazusky, Raymond, Jr.: *See*—
Brodbeck, Joseph F.; and Kazusky, Raymond, Jr., 4,248,115, Cl. 83-435.100.

Keblys, Kestutis A., to Ethyl Corporation. Preparation of metal bromides. 4,248,850, Cl. 423-491.000.

Keller, Douglas V., Jr., to Otisca Industries Limited. Coal recovery process. 4,248,698, Cl. 209-5.000.

Kelley, Bruce G.: *See*—
Beggs, Donald; Kelley, Bruce G.; and Meissner, David C., 4,248,408, Cl. 266-156.000.

Kempin, Hans-Friedhelm, to Dragerwerk Aktiengesellschaft. Method and device for determining and separating the alveolar air proportion from the breathing air. 4,248,245, Cl. 128-719.000.

Kennecott Copper Corporation: *See*—
Lai, Ralph W. M.; and Litchfield, John K., 4,248,837, Cl. 423-24.000.

Kennedy Van Saun Corporation: *See*—
Hukki, Risto T., 4,248,699, Cl. 209-144.000.

Kenny, John, to Needle Industries Limited. Cardiac pacemakers. 4,248,237, Cl. 128-419.00P.

Kepler, Don L. Golf putter. 4,248,430, Cl. 273-162.00D.

Kerkentzes, Stanley J.: *See*—
Aiken, John E.; Didycz, William J.; and Kerkentzes, Stanley J., 4,248,832, Cl. 422-177.000.

Kerr-McGee Chemical Corporation: *See*—
Knebel, Alfred H.; and Rhodes, Donald E., 4,248,692, Cl. 208-8.0LE.
McGough, Eugene R.; and Adams, Albert, 4,248,601, Cl. 23-293.00R.

Kertzman, Harvey Z. Tide operated power generating apparatus. 4,249,085, Cl. 290-53.000.

Kerwin, Daniel, to Meyercord Co., The. Position control system for a moving web. 4,248,655, Cl. 156-351.000.

Kiener, Paul: *See*—
Cheminal, Bernard; and Kiener, Paul, 4,248,673, Cl. 203-35.000.

Kigre, Inc.: *See*—
Myers, John D.; and Vollers, Charles S., 4,248,732, Cl. 252-301.60P.

Kiguchi, Isamu: *See*—
Mitsuhata, Masashi; Kumazawa, Toshihiko; and Kiguchi, Isamu, 4,248,740, Cl. 252-463.000.

Kikuchi, Mitsuo: *See*—
Murakami, Tsugio; Kikuchi, Mitsuo; and Igawa, Kazushige, 4,248,848, Cl. 423-474.000.

Kikuchi, Toshihiro: *See*—
Jinno, Takayuki; Kotake, Yasuo; and Kikuchi, Toshihiro, 4,248,312, Cl. 175-57.000.

Kilichowski, Kurt B., to GTE Laboratories Incorporated. Cathode ray tube having amorphous resistive film on internal surfaces and method of forming the film. 4,249,107, Cl. 313-479.000.

Kilmer, Dan L.: *See*—
Cox, Robert M.; Kilmer, Dan L.; and Kolkowski, Adam, 4,249,221, Cl. 360-97.000.

Kilstofte, Ray R., to True Med, Inc. Livestock medicator apparatus. 4,248,176, Cl. 119-72.000.

King, Frederick D.: *See*—
Skillen, Richard P.; and King, Frederick D., 4,248,035, Cl. 57-6.000.

King, Michael T. Apparatus for cancelling non-refillable glass bottles. 4,248,388, Cl. 241-99.000.

King, Paul V.; Becher, Albert F.; and Henderson, Wilmer P. Blast suppressive shielding. 4,248,342, Cl. 206-3.000.

Kinoshita, Kazuto: *See*—
Akatsu, Toshio; Kinoshita, Kazuto; and Fujiyoshi, Toshimitsu, 4,248,095, Cl. 73-771.000.

Kinoshita, Tsukuru; Ogata, Yuzuru; and Suzue, Masayoshi, to Otsuka Chemical Co., Ltd. Process for preparing crystalline phosphonitrilic chloride oligomers. 4,248,845, Cl. 423-300.000.

Kinugasa, Hiroaki: *See*—
Sawayama, Tadahiro; Kinugasa, Hiroaki; Nishimura, Haruki; Takeyama, Kunihiko; and Hosoki, Kanoo, 4,248,883, Cl. 424-274.000.

Kirby, James S.; Jones, Lawrence; Moe, Walter; and Diker, Charles M. Lane changing car. 4,248,012, Cl. 46-262.000.

Kirschner, Horst: *See*—
Karlen, Urs; and Kirschner, Horst, 4,249,098, Cl. 310-183.000.

Kish, Robert S.: *See*—
Hannah, Richard E.; and Kish, Robert S., 4,248,214, Cl. 128-7.000.

Kitajima, Masao; Kondo, Asaji; and Arai, Fuminori, to Fuji Photo Film Co., Ltd. Integrated analytical material suitable for simultaneously performing a plurality of analyses. 4,248,829, Cl. 422-56.000.

Kitani, Teruo: *See*—
Baba, Takaaki; Kitani, Teruo; Nakazawa, Masao; Yoshino, Hirokazu; Fujita, Tatsuo; and Tsuboka, Eiichi, 4,249,211, Cl. 358-183.000.

Kitano, Kyozo: *See*—
Sekiguchi, Shizuo; Nagano, Katsumasa; Miyawaki, Yozo; and Kitano, Kyozo, 4,248,793, Cl. 260-513.00T.

Kitko, David J., to Procter & Gamble Company, The. Method for sanitizing toilets. 4,248,827, Cl. 422-37.000.

Kiwala, Jacob: *See*—
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,248,250, Cl. 131-17.00R.

Kiyasu, John Y. Wash cycle process. 4,248,642, Cl. 134-2.000.

Klaiber, George S.; Grajek, Stanley A.; and Hill, Robert S., to Wurlitzer Company, The. Piano soundboard. 4,248,124, Cl. 84-192.000.

Klassen, Horst W., to Girling Limited. Sliding caliper disc brake. 4,248,328, Cl. 188-73.300.

Klean Kup Systems, Inc.: *See*—
Kneubuehl, Herman J., 4,248,178, Cl. 119-75.000.

Kleba, Ronald J.; and Bednarski, Stanislaw H., to General Electric Company. Automatic device for synchronization of prime mover with electrical grid. 4,249,088, Cl. 307-87.000.

Kleine, Richard A.; and Byers, Warren J., to Unarco Industries, Inc. Knock down pole construction. 4,248,025, Cl. 52-731.000.

Kleiner, Eduard K.: *See*—
Lee, Ping I.; and Kleiner, Eduard K., 4,248,380, Cl. 239-6.000.

Klemp, Eldon J.: *See*—
Lentz, Ronald R.; and Klemp, Eldon J., 4,249,058, Cl. 219-10.55F.

Klendauer, Wolfgang: *See*—
Gerigk, Gunter; Klendauer, Wolfgang; Pietruck, Horst; and Hammer, Klaus-Dieter, 4,248,912, Cl. 427-230.000.

Klimavichjus, Prantsishkus-Algirdas R.: *See*—
Vasiliev, Petr E.; Klimavichjus, Prantsishkus-Algirdas R.; Kondratiev, Alexandr V.; Matsjukyavichjus, Juozas J.; Beksha, Gabrieljus-Vitautas L.; and Kaminskas, Vitautas A., 4,249,100, Cl. 310-317.000.

Klockner-Humboldt-Deutz AG: *See*—
Deussner, Herbert, 4,248,641, Cl. 106-100.000.
Esna-Ashari, Mohammed, 4,248,628, Cl. 75-101.00R.
Jakobs, Willy; and Caspelherr, Heinz, 4,248,556, Cl. 409-131.000.

Klumpp, Marlin K. Remote control hang glider towing aircraft. 4,248,394, Cl. 244-3.000.

Knebel, Alfred H.; and Rhodes, Donald E., to Kerr-McGee Chemical Corporation. Process for the discharge of ash concentrate from a coal deashing system. 4,248,692, Cl. 208-8.0LE.

Kneubuehl, Herman J., to Klean Kup Systems, Inc. Poultry watering cup. 4,248,178, Cl. 119-75.000.

Knief, Gerald L.: *See*—
Peterson, Jerry D.; and Knief, Gerald L., 4,248,177, Cl. 119-73.000.

Knothe, Herbert; Redlich, Horst; and Roschmann, Klaus, to Teldec-Telefunken-Decca Schallplatten GmbH. Mechanical record cutting method. 4,248,438, Cl. 369-127.000.

Knox, Norman C. Lifting harness. 4,248,469, Cl. 294-78.00A.

Kobashi, Kiyoshi: *See*—
Matsui, Takeshi; Kohama, Tokio; Kawai, Hisasi; Nishimatsu, Akira; Ina, Toshikazu; Nohira, Hidetaka; and Kobashi, Kiyoshi, 4,248,187, Cl. 123-568.000.

Kobashi, Toshiyuki; Ozaki, Masahiko; and Abe, Noboru, to Japan Exlan Company Limited. Process for producing a rush-like structure. 4,248,812, Cl. 264-51.000.

Kobayashi, Sumio: *See*—
Sakai, Toshihiko; Kobayashi, Sumio; and Suzuki, Takao, 4,248,809, Cl. 264-30.000.

Kobayashi, Tadashi: *See*—
Yamaguchi, Akihiro; Kobayashi, Tadashi; Yamaguchi, Keisaburo; and Murakami, Hisamichi, 4,248,804, Cl. 568-47.000.

Kobayashi, Tsuneki: *See*—
Miyasaka, Masao; and Kobayashi, Tsuneki, 4,248,146, Cl. 101-93.030.

Kobayashi, Yoshiro: *See—*
DeLuca, Hector F.; Tanaka, Yoko; Ikekawa, Nobuo; and Kobayashi, Yoshiro, 4,248,791, Cl. 260-397.200.

Kobe Steel, Limited: *See—*
Wakabayashi, Akira; Watanabe, Shoichi; Sato, Koji; Kohama, Hiroyuki; and Sakuma, Katsumi, 4,248,612, Cl. 55-350.000.

Koch, Hans-Joachim: *See—*
Konig, Eberhard; Pedain, Josef; and Koch, Hans-Joachim, 4,248,756, Cl. 260-31.20N.

Koerner, Gotz; Schmidt, Gunter; and Nickel, Friedhelm, to Th. Goldschmidt AG. Preparation for shrinkproofing wool. 4,248,590, Cl. 8-128.00A.

Kohama, Hiroyuki: *See—*
Wakabayashi, Akira; Watanabe, Shoichi; Sato, Koji; Kohama, Hiroyuki; and Sakuma, Katsumi, 4,248,612, Cl. 55-350.000.

Kohama, Tokio: *See—*
Matsui, Takeshi; Kohama, Tokio; Kawai, Hisasi; Nishimatsu, Akira; Ina, Toshikazu; Nohira, Hidetaka; and Kobashi, Kiyoshi, 4,248,187, Cl. 123-568.000.

Kohlbacher, Gerhard: *See—*
Christiansen, Peter; and Kohlbacher, Gerhard, 4,249,201, Cl. 358-24.000.

Kohler, George O.: *See—*
Lyon, Cameron K.; Kohler, George O.; and Dinius, David A., 4,248,899, Cl. 426-98.000.

Koizumi, Makoto: *See—*
Aoi, Hajime; Tamura, Takashi; Koizumi, Makoto; Kunimi, Noboru; Enomoto, Minoru; and Hatanaka, Noriaki, 4,249,219, Cl. 360-46.000.

Kojimoto, Susumu; Ogawa, Tadatoshi; and Abe, Youzou, to Sumitomo Chemical Company, Limited. Thermoforming process of corrugated plastic board. 4,248,651, Cl. 156-198.000.

Koken Boring Machine Co., Ltd.: *See—*
Jinno, Takayuki; Kotake, Yasuo; and Kikuchi, Toshihiro, 4,248,312, Cl. 175-57.000.

Kolacny, Peter, to Siemens Aktiengesellschaft. Circuit arrangement for displacing the clutter spectrum in a radar receiver. 4,249,179, Cl. 343-7.00A.

Kolb, Bruno; Boege, Dietrich; Pospisil, Peter; and Riegger, Hubert, to Bodenseewerk, Perkin-Elmer & Co., GmbH. Closure for sample vials. 4,248,355, Cl. 215-274.000.

Kolb, Gunter; and Morcher, Bernhard, to AGFA-Gevaert, A.G. Method of preventing the formation of contact spots on photographic materials. 4,248,963, Cl. 430-501.000.

Kolkowski, Adam: *See—*
Cox, Robert M.; Kilmer, Dan L.; and Kolkowski, Adam, 4,249,221, Cl. 360-97.000.

Komaki, Shigeki, to Sharp Kabushiki Kaisha. Metallic housing for an electronic apparatus with a flat keyboard. 4,249,054, Cl. 200-159.00B.

Kondo, Asaji: *See—*
Kitajima, Masao; Kondo, Asaji; and Arai, Fuminori, 4,248,829, Cl. 422-56.000.

Kondratiev, Alexandr V.: *See—*
Vasiliev, Petr E.; Klimavichjus, Prantsishkus-Algirdas R.; Kondratiev, Alexandr V.; Matsjukyavichjus, Juozas J.; Beksha, Gabrieljus-Vitautas L.; and Kaminskas, Vitautas A., 4,249,100, Cl. 310-317.000.

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Kopp, Clinton V., to Baxter Travenol Laboratories, Inc. Method of repairing leaks in a hollow capillary fiber diffusion device. 4,248,648, Cl. 156-94.000.

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Tsuzuki, Akira; and Tobitani, Hiroshi, 4,248,562, Cl. 414-212.000.

Korte, Eugene C.; and Rayburn, Karen C., to International Business Machines Corporation. Separated sensor array abutment. 4,249,217, Cl. 358-294.000.

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Szekely, Istvan; Lovasz, Marianna, nee Gaspar; Kovacs, Gabor; Soos, Rudolf; Nagy, Lajos; and Koszegi, 4,248,888, Cl. 424-306.000.

Kotake, Yasuo: *See—*
Jinno, Takayuki; Kotake, Yasuo; and Kikuchi, Toshihiro, 4,248,312, Cl. 175-57.000.

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Oishi, Kazuo; Hinachi, Matatoyo; Matsui, Takeshi; and Kotera, Masao, 4,249,176, Cl. 343-6.5LC.

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Darcy, Jon J.; Angerame, Richard A.; and Kramer, Aaron R., 4,248,051, Cl. 62-115.000.

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Krasso, Anna; and Krebs, Ernst-Peter, 4,248,880, Cl. 424-270.000.

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Kreikebaum, Gerhard: *See—*
Shofner, Frederick M.; Miller, Arthur C., Jr.; and Kreikebaum, Gerhard, 4,249,244, Cl. 364-525.000.

Kremesec, Victor J., Jr.: *See—*
Suffridge, Fred E.; and Kremesec, Victor J., Jr., 4,248,301, Cl. 166-252.000.

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Kreuder, Hans J.: *See—*
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Addy, Clarence A.; and Krizen, William C., 4,248,165, Cl. 112-121.280.

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Peters, Melville F., 4,248,643, Cl. 136-248.000.

Krueger, Hans: *See—*
Bechteler, Martin; and Krueger, Hans, 4,248,502, Cl. 350-341.000.

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Carney, John L., Jr.; and Krug, John A. K., Jr., 4,248,160, Cl. 105-377.000.

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Schlegel, Eberhard; and Krugel, Manfred, 4,249,057, Cl. 200-296.000.

Krugener, Rolf: *See—*
Koucky, Antonin; and Krugener, Rolf, 4,248,480, Cl. 297-473.000.

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Goward, George W.; Grey, Delton A.; and Krutenat, Richard C., 4,248,940, Cl. 428-633.000.

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Sprecker, Mark A.; Kryschuk, John J.; and Hall, John B., 4,248,787, Cl. 260-338.000.

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Paton, Boris E.; Lebedev, Vladimir K.; Kuchuk-Yatsenko, Sergei I.; Sakharnov, Vasily A.; Galyan, Boris A.; Dobrovolsky, Stanislav D.; and Sidorenko, Mikhail N., 4,249,153, Cl. 336-82.000.

Kuhlman, Harvey G. Shredded meat applicator. 4,248,173, Cl. 118-20.000.

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Mitsuhata, Masashi; Kumazawa, Toshihiko; and Kiguchi, Isamu, 4,248,740, Cl. 252-463.000.

Kumins, Charles A.: *See—*
Westdale, Virgil W.; and Kumins, Charles A., 4,248,950, Cl. 430-31.000.

Kunimi, Noboru: *See—*
Aoi, Hajime; Tamura, Takashi; Koizumi, Makoto; Kunimi, Noboru; Enomoto, Minoru; and Hatanaka, Noriaki, 4,249,219, Cl. 360-46.000.

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Strobel, Felix; and Kunz, Willi, 4,248,316, Cl. 177-50.000.

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Liertz, Heinrich; Kunze, Dieter; and Parstorfer, Richard, 4,248,499, Cl. 350-96.210.
Kuo, Ted L. C., to Thomas & Betts Corporation. Self-locking clamp member. 4,248,493, Cl. 339-97.00R.
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Fuchigami, Yoshio; and Nakashima, Toshihide, 4,248,736, Cl. 252-428.000.
Kurashina, Fumiaki: *See*—
Yomota, Junji; Kurashina, Fumiaki; Kamiide, Mareyasu; and Takita, Ichiro, 4,248,638, Cl. 106-56.000.
Kurita, Takaji; and Enoguchi, Yuji, to Minolta Camera Kabushiki Kaisha. Electrophotographic copying apparatus with improved fixing arrangement. 4,248,520, Cl. 355-3.0FU.
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Imaide, Takuya; Kuroyanagi, Tomomitsu; and Masuda, Michio, 4,249,213, Cl. 358-183.000.
Kurs, Artur: *See*—
Derleth, Helmut; Walter, Ludwig; Bretz, Karl-Heinrich; and Kurs, Artur, 4,248,847, Cl. 423-329.000.
Kuru, Hiroshi: *See*—
Akiyama, Mistuo; and Kuru, Hiroshi, 4,248,527, Cl. 355-14.00R.
Kurz, Craven H. Orthodontic tool. 4,248,587, Cl. 433-4.000.
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Kutzki, Manfred, to Berliner Bank AG. Remote alarm installation. 4,249,036, Cl. 179-5.00R.
Kwan, Stephen C., to Texas Instruments Incorporated. Temperature compensated reference voltage regulator. 4,249,123, Cl. 323-314.000.
Labbe, Claude. Vehicle frame straightener. 4,247,966, Cl. 24-116.00R.
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LaBounty, Roy E. Backhoe grapple assembly. 4,248,471, Cl. 294-88.000.
Lacour, Alain P.: *See*—
Bourgery, Guy R.; Lacour, Alain P.; Moinet, Gerard H.; Pourrias, Bernard M.; and Ruch, Anne-Marie P., 4,248,788, Cl. 260-340.300.
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Mathieu, Alain, 4,248,637, Cl. 106-40.00R.
Laganis, Deno, to Schenectady Chemicals, Inc. Water soluble insulating varnish. 4,248,745, Cl. 260-22.00D.
Lai, Ralph W. M.; and Litchfield, John K., to Kennecott Copper Corporation. Solvent extraction of copper, nickel with methyl hexyl dioxime. 4,248,837, Cl. 423-24.000.
Lal, Joginder; and Smith, Richard R., to Goodyear Tire & Rubber Company, The. Selective cyclization of block copolymers. 4,248,986, Cl. 525-359.000.
Lala, Louis A., to American Screen Printing Equipment Company. Combined squeegee and flood bar for automatic presses. 4,248,150, Cl. 101-123.000.
Lamb, Frank: *See*—
Clubley, Brian G.; Davis, Boyce I. D.; Hyde, Thomas G.; Lamb, Frank; and Randell, Donald R., 4,248,976, Cl. 525-2.000.
Lambert, Gerard L.: *See*—
Sims, Larry A.; Lambert, Gerard L.; Gross, Raymond J.; and Collins, Harold B.. 4,248,426, Cl. 273-108.000.
Lamers, Michael D.; and Martelli, Vincent P., to Measurement Analysis Corporation. Well logging evaporative thermal protection system. 4,248,298, Cl. 166-57.000.
Lammers, Ludwig: *See*—
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Lamoglia, Miguel R. Lead bending tool. 4,248,274, Cl. 140-106.000.
Lampard, Robert D. Internal combustion engine and method of operation thereof with isolated combustion initiation. 4,248,192, Cl. 123-256.000.
Lancaster, Robert A.: *See*—
Atkinson, Alan W.; Clucas, Richard H.; Lancaster, Robert A.; and Perkins, Allen M., 4,248,664, Cl. 162-145.000.
Lancet, Michael S., to Conoco, Inc. Gasification of coal liquefaction residues. 4,248,605, Cl. 48-197.00R.
Landre, John K., to Syn-Optics. Articulated optical coupler. 4,248,213, Cl. 128-6.000.
Lange, Gottfried; and Heinrich, Hans, to Siemens Aktiengesellschaft. Arrangement for the production of electroradiographic x-ray photographs. 4,249,078, Cl. 250-315.200.
Langill, Addison W., Jr.; and Friedland, Harry, to Powell Industries, Inc. Digital fluid flow control apparatus. 4,248,263, Cl. 137-454.200.
Langlitz, Karlheinz; and Schmitz, Gunter, to Mannesmann Degam A.G. Wolfgang-Reuter-Platz. Steel furnace nozzle arrangement. 4,248,409, Cl. 266-268.000.
Lanier Business Products, Inc.: *See*—
Smith, Jack E., Jr.; and Mason, Paul C., 4,249,041, Cl. 369-28.000.
Lareau, Richard G., executor: *See*—
Cornelius, Richard T., deceased; and Lareau, Richard G., executor, 4,248,335, Cl. 194-4.00D.
Larro, Harold D. Fastening device. 4,248,131, Cl. 411-15.000.
Larsen, Hals N.; and Kamber, Peter W., to Boeing Company, The. Engine thrust control system. 4,248,042, Cl. 60-243.000.
Larsen, Robert H.: *See*—
Giaimo, Anthony; MacInnes, John R.; and Larsen, Robert H., 4,248,169, Cl. 112-255.000.
Larson, Willis A., to Oak Industries, Inc. Membrane switch with means for preventing contamination of the interior thereof. 4,249,044, Cl. 200-5.00A.
Lask, Helmut; and Holst, Arno, to Hoechst Aktiengesellschaft. Process for preparing swellable cross-linked carboxyalkylcelluloses, in the form of fibers, from cellulose hydrate and use thereof. 4,248,595, Cl. 8-116.00P.
Latex Products (Proprietary) Limited: *See*—
Winnard, Ronald, 4,248,221, Cl. 128-207.150.
Latino, Richard M., to Wright Line Inc. Means for storing and indexing microfiche. 4,247,999, Cl. 40-359.000.
Lau, Kei-Fung: *See*—
Yen, Kuo-Hsiung; Lau, Kei-Fung; and Kagiwada, Reynold S., 4,249,146, Cl. 333-195.000.
Lau, Philip T. S., to Eastman Kodak Company. Photographic emulsions, elements and processes utilizing release compounds. 4,248,962, Cl. 430-382.000.
Laurenz, Frank R., to Agricultural Research & Development, Inc. Barn scraper drive assembly. 4,248,406, Cl. 254-274.000.
Lautenschlager, Karl, to Karl Lautenschlager KG, Mobelbeschlagfabrik. Over-center hinge. 4,247,965, Cl. 16-145.000.
LaValley Industrial Plastics, Inc.: *See*—
LaValley, Richard W., 4,248,716, Cl. 210-402.000.
LaValley, Richard W., to LaValley Industrial Plastics, Inc. Trunnion and trunnion packing sleeve insert for rotary drum filter. 4,248,716, Cl. 210-402.000.
Laverty, John J.; and Gardlund, Zachariah G., to General Motors Corporation. Internally plasticized poly(vinyl chloride) block copolymers. 4,248,979, Cl. 525-129.000.
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Paton, Boris E.; Lebedev, Vladimir K.; Kuchuk-Yatsenko, Sergei I.; Sakharnov, Vasily A.; Galyan, Boris A.; Dobrovolsky, Stanislav D.; and Sidorenko, Mikhail N., 4,249,153, Cl. 336-82.000.
Lechner, Ed F. Tie down anchor. 4,248,558, Cl. 410-104.000.
Lechner, William L. Rotor blade structure and mounting for vertical axis wind machines. 4,248,568, Cl. 416-132.00B.
Lecot, Georges: *See*—
Crochet, Michel; and Lecot, Georges, 4,249,264, Cl. 455-612.000.
Lee, Chang H.: *See*—
Gidaspow, Dimitri; Lee, Chang H.; and Wasan, Darsh T., 4,248,686, Cl. 204-184.000.
Lee, Gary D.: *See*—
Chafetz, Harry; and Lee, Gary D., 4,248,719, Cl. 252-34.000.
Lee, Gene K., to UOP Inc. Regeneration of a immobilized enzyme system. 4,248,969, Cl. 435-176.000.
Lee, John M.: *See*—
Louis, George A.; Lee, John M.; Maricle, Donald L.; and Troccola, John C., 4,248,941, Cl. 429-13.000.
Lee, Ping I.; and Kleiner, Eduard K., to Airwick Industries, Inc. Aqueous-based air treating systems. 4,248,380, Cl. 239-6.000.
Lee, Robert S.: *See*—
Jones, Lawrence T.; Sims, Anson; Howden, Ashley G.; and Lee, Robert S., 4,248,006, Cl. 46-17.000.
Lee, William C., to Bell Telephone Laboratories, Incorporated. Cellular mobile radiotelephone system using tilted antenna radiation patterns. 4,249,181, Cl. 343-100.0CS.
Leeds & Northrup Limited: *See*—
Edwards, Roger D., 4,249,186, Cl. 346-35.000.
Legrand, Jean-Jacques; and Renault, Christain L. A., to Pharmindustrie. 2-Pyrrolidine methanol derivatives utilizable as medicaments. 4,248,884, Cl. 424-274.000.
Leighton, Robert E. Trucker mirror spray deflector. 4,248,497, Cl. 350-63.000.
Lemberger, Gary T.; and Lemberger, Ronald I. Board game. 4,248,437, Cl. 273-243.000.
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Lendvay, Andrew T.; and Spann, Billy M., to Philip Morris Incorporated. Continuous process for expanding tobacco. 4,248,252, Cl. 131-140.00P.
Lentz, Ronald R.; and Klemp, Eldon J., to Litton Systems, Inc. Feed system for a microwave oven. 4,249,058, Cl. 219-10.55F.
Lercher, John S.: *See*—
Gentile, Ralph; and Lercher, John S., 4,248,564, Cl. 414-412.000.
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Stemme, Otto; Lermann, Peter; Schroeder, Rolf; and Karl, Horst, 4,248,511, Cl. 354-173.000.
Leschen, Sergei I.: *See*—
Popov, Alexandr D.; Solomin, Vladimir A.; Trofimov, Vladimir A.; Mishkovich, Alexandr I.; Ponomarev, Vyacheslav A.; and Leschen, Sergei I., 4,249,114, Cl. 318-115.000.
Leslie, Co.: *See*—
Scull, William L., 4,248,403, Cl. 251-85.000.
Leukhardt, Jill L.; and Saar, David A., to Black and Decker, Inc. Anti-kickback power tool control. 4,249,117, Cl. 318-275.000.
Lever Brothers Company: *See*—
Schmidt, Theo, 4,248,822, Cl. 264-154.000.
Watson, Charles A., 4,248,860, Cl. 424-57.000.
Lewers, William R.: *See*—
Bulso, Joseph D., Jr.; and Lewers, William R., 4,248,076, Cl. 72-349.000.
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Leyh, Henry W. Anodizing method and apparatus. 4,248,674, Cl. 204-28.000.
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Hofmeister, Hagen, 4,249,252, Cl. 370-100.000.
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Christiansen, Peter; and Kohlbacher, Gerhard, 4,249,201, Cl. 358-24.000.
Lichliter, William L.; and Compton, Dennis N. Chimney sweeping brush. 4,247,964, Cl. 15-162.000.
Lieber, Thomas G. Adjustable bridge. 4,248,126, Cl. 84-299.000.
Lieber, Thomas G. String nut. 4,248,127, Cl. 84-314.00N.
Liebman, Bernard S. Insulating composition. 4,248,927, Cl. 428-284.000.
Liertz, Heinrich; Kunze, Dieter; and Parsiorfer, Richard, to Siemens Aktiengesellschaft. Splicing device for light wave guides. 4,248,499, Cl. 350-96.210.
Life Savers, Inc.: *See*—
Mackay, Donald A. M.; Bakal, Abraham I.; and Stroz, John J., 4,248,894, Cl. 426-3.000.
Stroz, John J.; Bakal, Abraham I.; and Mackay, Donald A. M., 4,248,895, Cl. 426-3.000.
Liggett Group Inc.: *See*—
Bryant, Herman G., Jr.; and Norman, Vello, 4,248,251, Cl. 131-17.00R.
Linder, Gerald S. Packaged medical appliance. 4,248,236, Cl. 128-349.00B.
Lindsay, David R. Device for supporting duck decoys or the like. 4,248,368, Cl. 224-249.000.
Lindstrom, Robert; Allen, Robert J.; and Juda, Walter, to Prototech Company. Carbon-cloth-based electrocatalytic gas diffusion electrodes, assembly and electrochemical cells comprising the same. 4,248,682, Cl. 204-114.000.
Lindstrom, Yngve, to Valmet Oy. Nozzle apparatus for airborne paper web dryers. 4,247,993, Cl. 34-156.000.
Linhart, Donald E. Air precleaner for internal combustion engine. 4,248,613, Cl. 55-394.000.
Linotek Oy: *See*—
Johansson, Ake A., 4,248,769, Cl. 260-97.700.
Linse, Vonne D.; and Pattee, Harry E., to Canadian Industries Limited. Explosive charge for explosive welding of large diameter metal pipe. 4,248,373, Cl. 228-107.000.
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Sekiguchi, Shizuo; Nagano, Katsumasa; Miyawaki, Yozo; and Kitano, Kyozo, 4,248,793, Cl. 260-513.00T.
Tomidokoro, Susumu; Sato, Michito; and Saika, Daini, 4,248,801, Cl. 564-463.000.
Litchfield, John K.: *See*—
Lai, Ralph W. M.; and Litchfield, John K., 4,248,837, Cl. 423-24.000.
Litton Business Systems, Inc.: *See*—
Davis, Ronald A., 4,248,919, Cl. 428-40.000.
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Hester, Thomas E., 4,249,229, Cl. 361-399.000.
Lentz, Ronald R.; and Klemp, Eldon J., 4,249,058, Cl. 219-10.55F.
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Jeffers, William; Seeley, Douglas; Faust, Raimund J.; and Liu, Shuchen, 4,248,959, Cl. 430-300.000.
Liu, Wen-Chih: *See*—
Sykes, Richard B.; Wells, Jerry S.; and Liu, Wen-Chih, 4,249,008, Cl. 546-281.000.
Livers, Gerald D.; Schafer, Douglas R.; and Thiele, Walter E., to General Motors Corporation. Inertia sensor switch. 4,249,046, Cl. 200-61.45R.
Locke, Merrel J.; and Penman, Arthur W., to Dougherty Brothers Company. Tray for ampoules or the like. 4,248,349, Cl. 206-538.000.
Lockhart, James A., Jr., to Burroughs Corporation. Logic signals control system. 4,249,173, Cl. 340-731.000.
Lockhart, James A., Jr.: *See*—
Durney, David J.; and Lockhart, James A., Jr., 4,249,196, Cl. 357-74.000.
Lockheed Electronics Co., Inc.: *See*—
Henig, Sammy S., 4,249,093, Cl. 307-232.000.
Lohaus, Gerhard: *See*—
Sander, Jurgen; Skaletz, Detlef; Buhr, Gerhard; and Lohaus, Gerhard, 4,248,957, Cl. 430-270.000.
Lohuis, Willem J.: *See*—
Himmelbauer, Erich E.; and Lohuis, Willem J., 4,249,215, Cl. 358-217.000.
Lombardi, Ronald A.: *See*—
Hornibrook, Walter J.; and Lombardi, Ronald A., 4,248,762, Cl. 260-42.220.
Hornibrook, Walter J.; and Lombardi, Ronald A., 4,248,917, Cl. 428-40.000.
Hornibrook, Walter J.; and Lombardi, Ronald A., 4,248,918, Cl. 428-40.000.
Long, William E., to Ciba-Geigy AG. Positively or negatively charged azo compounds containing a ballasting group. 4,248,772, Cl. 260-146.00R.
L'Oreal: *See*—
Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, 4,248,591, Cl. 132-7.000.
Lorenz, Kurt; and Dungs, Horst, to Carl Still GmbH & Co. KG, Firma. Device for producing abrasion-proof coke forms. 4,248,670, Cl. 202-99.000.
Lotfy, Hussein M. Tetherball. 4,248,423, Cl. 273-58.00C.
Louis, George A.; Lee, John M.; Maricle, Donald L.; and Trocciola, John C., to United Tecnologies Corporation. Solid electrolyte electrochemical cell. 4,248,941, Cl. 429-13.000.
Lovalenti, Sam, to Owens-Illinois, Inc. Detection of birdswing defects in glass containers. 4,249,075, Cl. 250-223.00B.
Lovasz, Marianna, nee Gaspar: *See*—
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Lubrizol Corporation, The: *See*—
Clason, Donald L.; and Schroeck, Calvin W., 4,248,722, Cl. 252-46.700.
Lucas Industries Limited: *See*—
Gaffney, Edward N., 4,248,323, Cl. 180-291.000.
Lucchi, George A.; and Aires, Ramon H., to RCA Corporation. Aircraft weather radar system. 4,249,174, Cl. 343-5.00W.
Ludwig, Frank A.; and Higley, Lin R., to Ford Motor Company. Sodium sulfur container with chromium/chromium oxide coating. 4,248,943, Cl. 429-104.000.
Lukens, Herbert R., Jr., to United States of America, Navy. Production of antibody toward asbestos and immunoassay therewith. 4,248,854, Cl. 424-8.000.
Lunkenheimer, Winfried; and Brandes, Wilhelm, to Bayer Aktiengesellschaft. Combating fungi with N-oxalyl-N-phenyl-aminoacids and esters thereof. 4,248,886, Cl. 424-278.000.
Lussier, Roger J.: *See*—
Vaughan, David E. W.; Lussier, Roger J.; and Magee, John S., Jr., 4,248,739, Cl. 252-455.00R.
Lux Audio Kabushiki Kaisha: *See*—
Mogi, Toshio, 4,248,393, Cl. 242-199.000.
Lyon, Cameron K.; Kohler, George O.; and Dinius, David A., to United States of America, Agriculture. Protected feeds for ruminants. 4,248,899, Cl. 426-98.000.
M.A.G. Engineering Co.: *See*—
Allenbaugh, Howard M., 4,248,452, Cl. 292-167.000.
MacGregor, James G., to Consolidated Energy Products Company. Grain-tobacco curing barn. 4,247,992, Cl. 34-91.000.
MacInnes, John R.: *See*—
Giaimo, Anthony; MacInnes, John R.; and Larsen, Robert H., 4,248,169, Cl. 112-255.000.
MacIntosh, Douglas H. Glycol ether/siloxane polymer penetrating and lubricating composition. 4,248,724, Cl. 252-49.600.
Mackay, Donald A. M.; Bakal, Abraham I.; and Stroz, John J., to Life Savers, Inc. Long-lasting flavored chewing gum containing non-sugar sweetener codried on chalk or other filler and method. 4,248,894, Cl. 426-3.000.
Mackay, Donald A. M.: *See*—
Stroz, John J.; Bakal, Abraham I.; and Mackay, Donald A. M., 4,248,895, Cl. 426-3.000.
MacLeod, James M.: *See*—
Kubes, George J.; MacLeod, James M.; Fleming, Bruce I.; and Boiker, Henry I., 4,248,663, Cl. 162-72.000.
MacManus, Daniel C., to General Motors Corporation. Sequential switching device. 4,249,056, Cl. 200-1.00B.
Maeda, Isamu; and Aoshima, Masashi, to Sumitomo Chemical Company, Limited. Process for vulcanizing rubber at a low temperature. 4,248,987, Cl. 525-366.000.
Maeda, Kunio: *See*—
Chono, Masazumi; Maeda, Kunio; and Saito, Kunio, 4,249,004, Cl. 544-192.000.
Maejima, Mokichi, to Jyohoku Seiko Co., Ltd. Film extrusion die. 4,248,579, Cl. 425-227.000.
Maejima, Yoshihiko: *See*—
Shimazu, Teruo; and Maejima, Yoshihiko, 4,248,102, Cl. 74-10.330.
Maffrand, Jean-Pierre, to Parcor. L-Cysteine derivatives and medicaments containing them. 4,248,890, Cl. 424-309.000.
Magee, John S., Jr.: *See*—
Vaughan, David E. W.; Lussier, Roger J.; and Magee, John S., Jr., 4,248,739, Cl. 252-455.00R.
Magnavox Government and Industrial Electronics Company: *See*—
Purinton, Edwin C.; Auger, Robert L.; and Holzinger, Carl S., 4,249,167, Cl. 340-572.000.
Mahlkow, Hartmut: *See*—
Ehrich, Hans J.; Clauss, Wolfgang; and Mahlkow, Hartmut, 4,248,632, Cl. 106-1.110.
Mahoney, Frank A.; and Hutley, Ronald W. F., to Sperry Corporation. Time shared shifting print hammer assembly. 4,248,148, Cl. 101-93.090.
Maier, Josef: *See*—
Batz, Hans-Georg; Horn, Jurgen; Stellner, Klaus; Maier, Josef; Nelboeck-Hochstetter, Michael; and Weimann, Gunter, 4,248,786, Cl. 260-326.260.
Maiwurm, Ulrich: *See*—
Eberhard, Rolf; and Maiwurm, Ulrich, 4,249,066, Cl. 219-243.000.
Malachesky, Paul A., to Exxon Research & Engineering Co. Cell having an alkali metal anode, a fluorinated carbon cathode and an electrolyte which includes an alkali metal halide salt and a solvent system consisting of an ether solvent and a cyclic carbonate cosolvent. 4,248,946, Cl. 429-197.000.
Malchow, Max E., to RCA Corporation. Amplifier system with AGC, as for an AM radio. 4,249,137, Cl. 330-283.000.
Malec, Robert E., to Ethyl Corporation. Anti-wear additives in diesel fuels. 4,248,182, Cl. 123-1.00A.
Malinowski, William J. Optical smoke detector. 4,249,169, Cl. 340-630.000.
Malone, James F. Bird cage heater. 4,249,065, Cl. 219-220.000.

Manchee, Richard J.: *See—*
Ellwood, Derek C.; Manchee, Richard J.; and Robinson, Andrew, 4,248,862, Cl. 424-92.000.
Mandel, Alan F.; Capuano, Louis M.; Otto, Paul R.; and Eichler, Kenneth M., to Westinghouse Electric Corp. Elevator system. 4,248,327, Cl. 187-29.00R.
Mandrick, Ann. Magnetic sun visor attachment. 4,248,474, Cl. 296-97.00G.
Mangan, John P.; and Riordan, Edward D., to Joyal Products, Inc. Method and apparatus for controlling heat energy of a bonding transformer. 4,249,068, Cl. 219-497.000.
Manganaro, James L.: *See—*
Berkowitz, Sidney; Manganaro, James L.; and Juelke, Charles V., 4,247,988, Cl. 34-1.000.
Maniscalco, Joseph P.: *See—*
Allain, Ronald J.; Braithwaite, David G.; and Maniscalco, Joseph P., 4,248,838, Cl. 423-162.000.
Mannesmann Degam A.G. Wolfgang-Reuter-Platz: *See—*
Langlitz, Karlheinz; and Schmitz, Gunter, 4,248,409, Cl. 266-268.000.
Manning, Donald L. Heavy-duty suspension system. 4,248,455, Cl. 280-711.000.
Mansfield, Gerald R.: *See—*
Beaty, Robert C.; and Mansfield, Gerald R., 4,248,174, Cl. 118-665.000.
Mantellina, Calogero: *See—*
Gentili, Claudio; Mantellina, Calogero; and Scotti, Alessandro, 4,249,253, Cl. 371-38.000.
Mapes, Theodore J., to United States of America, Navy. Magnetic field transducer systems. 4,249,225, Cl. 361-152.000.
Marcello, Del F. Stirrup machine. 4,248,273, Cl. 140-105.000.
Marconi Instruments Limited: *See—*
Hurst, Geoffrey J.; and Butler, Andrew W., 4,249,144, Cl. 333-81.00R.
Marconi, Walter; Bartoli, Francesco; Gianna, Roberto; Morisi, Franco; and Spotorno, Giuseppina, to Snamprogetti S.p.A. Phenylalanine ammonia lyase occluded fibers for reducing phenylalanine blood-level. 4,248,704, Cl. 210-632.000.
Marcum, Alfred L., to Monsanto Research Corporation. Machine for fatigue testing of materials. 4,248,096, Cl. 73-828.000.
Marcyniuk, Orest P., to Gulf Oil Corporation. Flare ignition apparatus. 4,248,585, Cl. 431-202.000.
Margaroli, John L.; and Cimperman, Frederick J., to Vistan Corporation. Method for obtaining folded stuffing pieces of pimento. 4,248,903, Cl. 426-512.000.
Maricle, Donald L.: *See—*
Louis, George A.; Lee, John M.; Maricle, Donald L.; and Trocciola, John C., 4,248,941, Cl. 429-13.000.
Marinello, Rosolino. System for the cure of internal wounds and inflammation of human body, of the diathesis, of internal wounds and inflammation of ocular apparatus, and for strengthening of healing power of the drugs and brain. 4,248,230, Cl. 128-268.000.
Marinik, James A.: *See—*
Fraleigh, Ronald M.; and Marinik, James A., 4,248,768, Cl. 260-45.75R.
Marjollet, Jacques: *See—*
Bessouat, Roger; and Marjollet, Jacques, 4,248,181, Cl. 122-483.000.
Martelli, Vincent P.: *See—*
Lamers, Michael D.; and Martelli, Vincent P., 4,248,298, Cl. 166-57.000.
Martin, Charles R.; Tarbox, Philip B.; and Yates, Stephen W., to Platt Saco Lowell Limited. Yarn positioning means for open-end spinning machine piecing apparatus. 4,248,037, Cl. 57-263.000.
Martin, Georges: *See—*
Hennart, Claude; Martin, Georges; and Favreau, Jean, 4,249,029, Cl. 585-638.000.
Martin, Merritt W., Jr., to Roman Machine Co. Blow molding machine. 4,248,582, Cl. 425-531.000.
Martin Seib Limited: *See—*
Seib, Martin R. P., 4,248,416, Cl. 271-10.000.
Maruta, Yoshio; and Hosoya, Minoru, to Kao Soap Co., Ltd. Process for sticking chemical to fibrous article. 4,247,971, Cl. 29-4.50B.
Maruyama, Eiichi; Ataka, Saburo; Inao, Kiyohisa; Imamura, Yoshinori; Tsukada, Toshihisa; Takasaki, Yukio; and Hirai, Tadaaki, to Hitachi, Ltd. Radiation sensitive screen. 4,249,106, Cl. 313-365.000.
Maruyama, Hiromi: *See—*
Uchikawa, Sadao; Izumi, Masayuki; Maruyama, Hiromi; and Takeda, Renzo, 4,248,667, Cl. 176-24.000.
Marvin Glass & Associates: *See—*
Ferris, Michael J.; Meyer, Burton C.; Hicks, Alan A.; and Arias, Henry, 4,248,009, Cl. 46-202.000.
Jaworski, Eugene; and Breslow, Jeffrey D., 4,248,202, Cl. 124-16.000.
Marzocchi, Alfred; Roberts, Michael C.; and Bolen, Charles E., to Owens-Corning Fiberglas Corporation. Asphalt-coated glass fibers. 4,248,936, Cl. 428-391.000.
Masar, Edward J.; Oberg, David J.; and Williams, Ralph A., to Inmont Corporation. Thermosetting powders. 4,248,744, Cl. 260-17.4SG.
Masch, Vladimir; and Zamikhovsky, Alexander. Pillow-first aid kit with ejector. 4,247,961, Cl. 5-442.000.
Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See—*
Albert, Max, 4,248,191, Cl. 123-188.00S.
Mason, Paul C.: *See—*
Smith, Jack E., Jr.; and Mason, Paul C., 4,249,041, Cl. 369-28.000.
Massachusetts Institute of Technology: *See—*
Bozler, Carl O.; Chapman, Ralph L.; Fan, John C. C.; and McClelland, Robert W., 4,248,675, Cl. 204-38.00A.
Demain, Arnold L.; Konomi, Toshio; and Baldwin, Jack E., 4,248,966, Cl. 435-43.000.
Fan, John C. C., 4,248,687, Cl. 204-192.00P.
Masson, Andre, to Etablissements Pierre Angenieux. Device and method for adjusting the value of chromatism aberrations in an optical system, notably for TV cameras. 4,249,204, Cl. 358-55.000.
Masuda, Michio: *See—*
Imaide, Takuya; Kuroyanagi, Tomomitsu; and Masuda, Michio, 4,249,213, Cl. 358-183.000.
Mathieu, Alain, to Lafarge, S.A. Microporous material especially for use in the ceramic industry. 4,248,637, Cl. 106-40.00R.
Matsjukyavichjus, Juozas J.: *See—*
Vasiliev, Petr E.; Klimavichjus, Prantsishkus-Algirdas R.; Kondratiev, Alexandr V.; Matsjukyavichjus, Juozas J.; Beksha, Gabrieljus-Vitautas L.; and Kaminskas, Vitautas A., 4,249,100, Cl. 310-317.000.
Matsuda, Takashi, to Tokyo Shibaura Electric Co., Ltd. Photomask. 4,248,948, Cl. 430-5.000.
Matsui, Takeshi; Kohama, Tokio; Kawai, Hisasi; Nishimatsu, Akira; Ina, Toshikazu; Nohira, Hidetaka; and Kobashi, Kiyoshi, to Nippon Soken, Inc.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Electronic control system for internal combustion engines. 4,248,187, Cl. 123-568.000.
Matsui, Takeshi: *See—*
Oishi, Kazuo; Hinachi, Matatoyo; Matsui, Takeshi; and Kotera, Masao, 4,249,176, Cl. 343-6.5LC.
Matsui, Toshio: *See—*
Doi, Yasuhiko; Shimizu, Shigemitsu; Matsui, Toshio; Kawai, Yoshihisa; Irie, Yutaka; Suzuki, Norihiko; and Iwao, Soichi, 4,248,523, Cl. 355-13.000.
Matsumoto, Hiroshi: *See—*
Ogata, Masaru; Watanabe, Yoshihachi; Matsumoto, Hiroshi; and Tawara, Katsuya, 4,248,869, Cl. 424-248.500.
Matsumoto, Toshinori; and Kawamoto, Tamio, to Nissan Motor Company, Limited. Vehicle transmission with an automatic clutch. 4,248,333, Cl. 192-0.052.
Matsuo, Katsuyuki, to Alps Electric Co., Ltd. Push button switch. 4,249,055, Cl. 200-159.00B.
Matsuo, Kohtaro; and Tsuchida, Seiichi, to Arakawa Kagaku Kogyo Kabushiki Kaisha. Process for preparing stabilized rosin ester, and pressure-sensitive adhesive composition and hot-melt composition. 4,248,770, Cl. 260-104.000.
Matsuo, Yasushi: *See—*
Hattori, Yoshinori; Kawamura, Mitsuyoshi; and Matsuo, Yasushi, 4,248,813, Cl. 264-62.000.
Matsushita Electric Industrial Co., Ltd.: *See—*
Baba, Takaaki; Kitani, Teruo; Nakazawa, Masao; Yoshino, Hirokazu; Fujita, Tatsuo; and Tsuboka, Eiichi, 4,249,211, Cl. 358-183.000.
Kawashima, Syunichiro; Nishida, Masamitsu; Ueda, Ichiro; and Ouchi, Hiromu, 4,248,727, Cl. 106-46.000.
Takenaga, Mutsuo; Yamamoto, Osamu; and Yamashita, Tadaoki, 4,248,731, Cl. 252-301.40R.
Matsuzaki, Hideomi: *See—*
Kamegaya, Takeo; Matsuzaki, Hideomi; Kaneko, Ryuichi; and Yokozawa, Minori, 4,249,105, Cl. 313-213.000.
Mattel Inc.: *See—*
Sims, Larry A.; Lambert, Gerard L.; Gross, Raymond J.; and Collins, Harold B., 4,248,426, Cl. 273-108.000.
Matuta, Tosihiko: *See—*
Omae, Tsutomu; and Matuta, Tosihiko, 4,249,236, Cl. 363-87.000.
Maul Enterprises: *See—*
Maul, Thomas A., 4,248,184, Cl. 123-65.00R.
Maul, Thomas A., to Maul Enterprises. Two-cycle diesel internal combustion engine. 4,248,184, Cl. 123-65.00R.
Maurer, Thomas; Groettrup, Helmut; and Helmrich, Harald, to G.A.O. Gesellschaft fur Automation und Organisation mbH. Automatic money dispenser and method. 4,249,163, Cl. 340-149.00A.
Mayer, Manfred; Noltner, Gerhard; Nowack, Rudolf; and Strobel, Wolfgang, to Hoechst Aktiengesellschaft. Process for improving the processing properties of powdery polyolefins. 4,248,819, Cl. 264-109.000.
Mayer, Wilfried J. W.: *See—*
Ginsburg, David; Mayer, Wilfried J. W.; and Wexler, Allan, 4,249,018, Cl. 560-180.000.
Mazuela, Jose L. P. Method of using ball-in-cup game. 4,248,429, Cl. 273-123.00R.
McAllister, Gary L., to Jersey Nuclear-Avco Isotopes, Inc. CO_2 laser emitting at 16 microns in 02°0-01'0 transition. 4,249,139, Cl. 331-94.50P.
McArdle, Christopher J.; and Simeon, Omer T., to Prodyne Enterprises, Inc. Knife and chopper board combination. 4,247,984, Cl. 30-296.00R.
McCarthy, Bruce L.; and Dunn, Karl M., to ACI Technical Centre Pty Ltd. Sealing method. 4,248,356, Cl. 215-344.000.
McClane, Robert A., to Impact Manufacturing Co., Inc. Method of utilizing a flexible paint shield. 4,248,914, Cl. 427-282.000.
McClelland, Robert W.: *See—*
Bozler, Carl O.; Chapman, Ralph L.; Fan, John C. C.; and McClelland, Robert W., 4,248,675, Cl. 204-38.00A.
McCloskey, Chester M.; Fischer, James R.; and Scott, Leonard F., to Norac Company, Inc., The. Preparation of germaazaspirodiones and germaazaspiranes. 4,248,785, Cl. 260-326.50A.

McConnell, Lorne D., to Gould Inc. On-line fault locator for gas-insulated conductors with plural detectors. 4,249,126, Cl. 324-52.000.

McCormack, John L.: *See—*
Wilson, Marlin V.; Nickell, Larry C.; and McCormack, John L., 4,248,272, Cl. 139-353.000.

McCormick, Harold E., to Ramsey Corporation. Titania-alumina-yttria piston ring facing. 4,248,440, Cl. 277-224.000.

McDaniel, Max P.; and Welch, Melvin B., to Phillips Petroleum Company. Treatment of silica. 4,248,735, Cl. 252-428.000.

McDonald, Edward S.; and Close, G. M. Automobile dashboard power adapter. 4,248,494, Cl. 339-154.00A.

McDonald, Hugh C., to Corning Glass Works. Detection and quantitation of Neisseria via radioimmunoassay of an enzyme present in Neisseria bacteria. 4,248,964, Cl. 435-7.000.

McDonnell Douglas Corporation: *See—*
Downing, James W.; and Verhoeven, Teunes, 4,248,105, Cl. 74-710.500.
Hsia, Yukun, 4,249,191, Cl. 357-41.000.

McDonough Power Equipment, Division of Fuqua Industries, Inc.: *See—*
Jackson, Harold P.; and Rhinehart, Richard W., 4,248,034, Cl. 56-17.200.

McGlashen, James N., to Dunlop Limited. Apparatus for the manufacture of balls. 4,248,658, Cl. 156-475.000.

McGough, Eugene R.; and Adams, Albert, to Kerr-McGee Chemical Corporation. Process for reducing the sodium chloride content of a potassium salt. 4,248,601, Cl. 23-293.00R.

McGown, James B.; and Root, Ernest F., to Foxboro Company, The. Float for use in tank gauging systems. 4,248,088, Cl. 73-319.000.

McGrath, Joseph M.; and Johnson, Daryl D., to Minnesota Mining and Manufacturing Company. Heat-activated adhesive. 4,248,748, Cl. 260-27.00R.

McGraw-Edison Co.: *See—*
Earle, Kent L., 4,249,120, Cl. 318-729.000.

McGuire, Robert C.; and Belcher, John J., Jr., to Dresser Industries, Inc. Mining machine. 4,248,611, Cl. 55-238.000.

McKane, John, to Scaffolding Components Limited. Tubular scaffolding coupling. 4,248,544, Cl. 403-49.000.

McKibben, Barry A., to Tektronix, Inc. Dynamic focus and astigmatism correction circuit. 4,249,112, Cl. 315-382.000.

McKinney, James E., Jr., to Brown International Corporation. Apparatus for extracting citrus peel oil from whole fruit. 4,248,142, Cl. 99-509.000.

McLain, Philippe H.; Shrontz, Robert J.; and Tringali, Dominick, to Shakespeare Company. Drive shaft assembly and method for making same. 4,248,062, Cl. 64-1.00S.

McNeely, Gerald W., to Akzona Incorporated. Time watch or depletion indicator for removable substances. 4,248,597, Cl. 23-230.00R.

McNeil, Daniel W.; and Phillips, Benjamin, to Union Carbide Corporation. Oxydehydrogenation of certain $\geq$C4 saturated oxyhydrocarbon compounds. 4,249,020, Cl. 560-214.000.

McNellis, John R., to Pacific-Atlantic Products, Ltd. Downrigger system. 4,248,002, Cl. 43-27.400.

McQuay-Perfex Inc.: *See—*
Cornelius, Richard T., deceased; and Lareau, Richard G., executor, 4,248,335, Cl. 194-4.00D.

McWethy, Wesley I. Vehicle towing hitch having readily selectable tow balls. 4,248,450, Cl. 280-415.00A.

McWhorter, Edward M. Bidirectional pulse jet ejector manifold. 4,248,199, Cl. 123-568.000.

McWilliams, William R. Skip row cultivators. 4,248,310, Cl. 172-661.000.

Mead Corporation, The: *See—*
Fernalld, Clifford S., Jr., 4,249,189, Cl. 346-75.000.

Measurement Analysis Corporation: *See—*
Lamers, Michael D.; and Martelli, Vincent P., 4,248,298, Cl. 166-57.000.

Mecan Arbed S.A.R.L.: *See—*
Weber, Heinrich; Dungs, Horst; Ferdinand, Fritz; Brasseur, Yves; and Birscheidt, Henri, 4,248,603, Cl. 44-10.00J.

Meckstroth, Alan F. Pilot operated fluid control valve. 4,248,402, Cl. 251-11.000.

Mecone, David W.: *See—*
Colville, William T.; Mecone, David W.; and Hartman, Donald W., 4,249,230, Cl. 362-13.000.

Med General, Inc.: *See—*
Ware, Lyle A.; and Noerenberg, Marc D., 4,248,247, Cl. 128-798.000.

Medland, Geoffrey P.: *See—*
Wilde, Geoffrey L.; Taylor, Maurice I.; and Medland, Geoffrey P., 4,248,041, Cl. 60-226.00R.

Meek, Vance R.: *See—*
Alexander, David C.; and Meek, Vance R., 4,248,114, Cl. 83-347.000.

Mehta, Gurmukh D., to InterTechnology/Solar Corporation. Industrial drying. 4,247,991, Cl. 34-35.000.

Meier, James: *See—*
Erickson, Norman; and Meier, James, 4,248,130, Cl. 84-434.000.

Meier, Josef, to Filtrox Maschinenbau A.G. Filtration plant. 4,248,713, Cl. 210-232.000.

Meissner, David C.: *See—*
Beggs, Donald; Kelley, Bruce G.; and Meissner, David C., 4,248,408, Cl. 266-156.000.

Mejia, Oscar: *See—*
Alvarez, Mario Y.; and Mejia, Oscar, 4,248,945, Cl. 429-194.000.

Melton, Vernon L. Welding machine. 4,248,371, Cl. 228-7.000.

Mercier, Jacques H., to Normand Trust. Adjustable flow pulse dampener. 4,248,269, Cl. 138-30.000.

Merck & Co., Inc.: *See—*
Cragoe, Edward J., Jr.; Williams, Haydn W. R.; and Woltersdorf, Otto W., Jr., 4,249,021, Cl. 562-462.000.

Mescam, Jean-Francois; and Balla, Thomas, to Compagnie Internationale Pour L'Informatique Cii-Honeywell Bull (Societe Anonyme). High-speed coupler for transmission lines or computer peripherals which employs a special microinstruction structure. 4,249,239, Cl. 364-200.000.

Messina, Gene. Electronic maze game. 4,248,422, Cl. 273-1.00E.

Metallgesellschaft Aktiengesellschaft: *See—*
Eisenlohr, Karl-Heinz. 4,248,691, Cl. 208-8.0LE.
Schminke, Heinz; Krebs, Rudolf; Wendel, Gunter; Schmidt, Hans-Jurgen; Desch, Willy; and Nitz, Jurgen, 4,248,610, Cl. 55-101.000.

Mettler Instruments AG: *See—*
Strobel, Felix; and Kunz, Willi, 4,248,316, Cl. 177-50.000.

Metzger, William J., to Midland-Ross Corporation. Rotary locksetting mechanism for a rigid jaw coupler. 4,248,354, Cl. 213-100.00W.

Meyer, Burton C.: *See—*
Ferris, Michael J.; Meyer, Burton C.; Hicks, Alan A.; and Arias, Henry, 4,248,009, Cl. 46-202.000.

Meyer, Horst: *See—*
Bossert, Friedrich; Franckowiak, Gerhard; Heise, Arend; Kazda, Stanislav; Meyer, Horst; Stoepel, Kurt; Towart, Robertson; and Wehinger, Egbert, 4,248,873, Cl. 424-256.000.

Meyercord Co., The: *See—*
Kerwin, Daniel, 4,248,655, Cl. 156-351.000.

Micallef, Alfred M., to Jamak, Inc. Removable stretch gasket for oven door. 4,248,017, Cl. 49-493.000.

Micheletti, Fabrizio, to Brematex S.p.A. Programming device for circular stocking knitting machines and the like. 4,248,065, Cl. 66-237.000.

Micheli, Adolph L., to General Motors Corporation. Uncompensated low temperature stoichiometric air/fuel ratio exhaust gas sensor. 4,249,156, Cl. 338-34.000.

Michelson, Anatol. Fusion process for forming shell cores. 4,248,288, Cl. 164-16.000.

Michigan Technological University, Board of Control of: *See—*
Caughey, Robert A., 4,248,163, Cl. 108-53.300.
Haataja, Bruce A., 4,248,820, Cl. 264-113.000.

Micr-Shield Co.: *See—*
Buros, William B., 4,249,072, Cl. 235-491.000.

Midland-Ross Corporation: *See—*
Hipp, James D., 4,248,159, Cl. 105-308.00R.
Metzger, William J., 4,248,354, Cl. 213-100.00W.

Midrex Corporation: *See—*
Beggs, Donald; Kelley, Bruce G.; and Meissner, David C., 4,248,408, Cl. 266-156.000.
Scarlett, John C.; and Sanzenbacher, Charles W., 4,248,626, Cl. 75-38.000.

Mifsud, Joseph F., to Exxon Production Research Company. Seismic vibrator and method for improving the output of a seismic vibrator. 4,248,324, Cl. 181-121.000.

Mijovic, Miroslav V.: *See—*
Baigrie, Brian D.; Bailey, Joseph; Johnston, Linda G.; and Mijovic, Miroslav V., 4,248,956, Cl. 430-225.000.

Miles Laboratories, Inc.: *See—*
Ginsburg, David; Mayer, Wilfried J. W.; and Wexler, Allan, 4,249,018, Cl. 560-180.000.

Milkovich, Ralph; Doak, Kenneth; and Bi, Le-Khac, to ARCO Polymers, Inc. Clear impact resistant thermoplastic star-block copolymers. 4,248,981, Cl. 525-271.000.

Milkovich, Ralph: *See—*
Bi, Le-Khac; and Milkovich, Ralph, 4,248,980, Cl. 525-271.000.
Bi, Le-Khac; and Milkovich, Ralph, 4,248,982, Cl. 525-271.000.
Bi, Le-Khac; Milkovich, Ralph; and Doak, Kenneth W., 4,248,983, Cl. 525-314.000.
Bi, Le-Khac; Milkovich, Ralph; and Doak, Kenneth W., 4,248,984, Cl. 525-314.000.

Miller, Arthur C., Jr.: *See—*
Shofner, Frederick M.; Miller, Arthur C., Jr.; and Kreikebaum, Gerhard, 4,249,244, Cl. 364-525.000.

Miller, Charles H.: *See—*
Shortway, Harry A.; Graham, Alan A.; and Miller, Charles H., 4,248,922, Cl. 428-159.000.

Miller, David D., to Gulf & Western Manufacturing Company. Counter/timer with incremental indicators. 4,249,070, Cl. 235-92.00T.

Miller, Harry W., Jr. Method and apparatus for debittering soybeans. 4,248,141, Cl. 99-483.000.

Miller, Roscoe E. Enema tip retention apparatus. 4,248,229, Cl. 128-245.000.

Mills, Alfred L.: *See—*
Batey, William; Mills, Alfred L.; and Williams, John A., 4,248,836, Cl. 423-4.000.

Milosovich, George: *See—*
DeNeale, Richard J.; Guley, Paul C.; and Milosovich, George, 4,248,857, Cl. 424-21.000.
Guley, Paul C.; DeNeale, Richard J.; and Milosovich, George, 4,248,856, Cl. 424-21.000.
Guley, Paul C.; DeNeale, Richard J.; and Milosovich, George, 4,248,858, Cl. 424-21.000.

Minami, Isao; Yoshioka, Yoshio; and Nomura, Hiroaki, to Takeda Chemical Industries, Ltd. Method of producing 5-fluorouracil derivatives. 4,249,006, Cl. 544-313.000.

Minnesota Mining and Manufacturing Company: *See*—
Davis, Donald E.; and Youngouist, Robert J., 4,249,218, Cl. 360-13.000.
McGrath, Joseph M.; and Johnson, Daryl D., 4,248,748, Cl. 260-27.00R.
Tung, Chi F.; and Frost, George W., Jr., 4,248,932, Cl. 428-325.000.
Wendling, Larry A., 4,249,011, Cl. 548-312.000.
Westberg, Walter M.; and Newes, Daniel J., 4,249,226, Cl. 361-223.000.

Minolta Camera Kabushiki Kaisha: *See*—
Doi, Yasuhiko; Shimizu, Shigemitsu; Matsui, Toshio; Kawai, Yoshihisa; Irie, Yutaka; Suzuki, Norihiko; and Iwao, Soichi, 4,248,523, Cl. 355-13.000.
Kurita, Takaji; and Enoguchi, Yuji, 4,248,520, Cl. 355-3.0FU.

Minoura, Kazuo, to Canon Kabushiki Kaisha. Projecting optical system with deflected optical axis maintained parallel to next optical axis. 4,248,495, Cl. 350-6.300.

Mirzadeh, Saed; Whipple, Richard E.; Grant, Patrick M.; and O'Brien, Harold A., Jr., to United States of America, Energy. Evaporation-based $Ge/^{68}Ga$ Separation. 4,248,730, Cl. 252-301.10R.

Mishkovich, Alexandr I.: *See*—
Popov, Alexandr D.; Solomin, Vladimir A.; Trofimov, Vladimir A.; Mishkovich, Alexandr I.; Ponomarev, Vyacheslav A.; and Leschen, Sergei I., 4,249,114, Cl. 318-115.000.

Mitsubishi Chemical Industries Limited: *See*—
Kamo, Seiichi; Watanabe, Tetzuo; and Nakayama, Kiyoshi, 4,248,617, Cl. 71-42.000.

Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Uchinuma, Kazuo; and Sasaki, Umekichi, 4,248,726, Cl. 252-52.00A.

Mitsuhata, Masashi; Kumazawa, Toshihiko; and Kiguchi, Isamu, to Nippon Shokubai Kagaku Kogyo Co. Ltd. Process for preparing silver-supported catalyst for the production of ethylene oxide. 4,248,740, Cl. 252-463.000.

Mitsui, Ryoichi: *See*—
Tamura, Nobuhiro; Fukuoka, Yohei; Yamamatsu, Setsuo; Suzuki, Yoshio; Mitsui, Ryoichi; and Ibuki, Tadayuki, 4,249,019, Cl. 560-208.000.

Mitsui Toatsu Chemicals, Incorporated: *See*—
Yamaguchi, Akihiro; Kobayashi, Tadashi; Yamaguchi, Keisaburo; and Murakami, Hisamichi, 4,248,804, Cl. 568-47.000.

Mitsumi Electric Co. Ltd.: *See*—
Shimazu, Teruo; and Maejima, Yoshihiko, 4,248,102, Cl. 74-10.330.

Mittleman, Herbert, to Baxter Travenol Laboratories, Inc. Plastic slide clamp for tubing. 4,248,401, Cl. 251-7.000.

Miura, Tatsuya: *See*—
Hozumi, Keiichi; Nishikaichi, Yuji; Ueda, Masao; Miura, Tatsuya; and Yamamoto, Hirotoshi, 4,249,062, Cl. 219-124.340.

Miyagishima, Tosh: *See*—
Hadsell, William R.; and Miyagishima, Tosh, 4,248,264, Cl. 137-454.200.

Miyakoshi, Kazumitsu: *See*—
Nakanishi, Akira; and Miyakoshi, Kazumitsu, 4,249,245, Cl. 364-710.000.

Miyasaka, Masao; and Kobayashi, Tsuneki, to Hitachi Koki Company, Limited. Impact printing apparatus having pivotable frame structures. 4,248,146, Cl. 101-93.030.

Miyashita, Osamu; and Akimoto, Hiroshi, to Takeda Chemical Industries, Ltd. Maytansinoids and use. 4,248,870, Cl. 424-248.540.

Miyawaki, Yozo: *See*—
Sekiguchi, Shizuo; Nagano, Katsumasa; Miyawaki, Yozo; and Kitano, Kyozo, 4,248,793, Cl. 260-513.00T.

Mizukami, Mineo: *See*—
Ito, Yutaka; Inaba, Masao; Mizukami, Mineo; and Shimizu, Mikio, 4,249,198, Cl. 358-13.000.

Mobil Tyco Solar Energy Corporation: *See*—
Jewett, David N., 4,248,645, Cl. 156-601.000.

Mochida, Ei; Ogawa, Nobuhisa; Shinkai, Hiroyuki; and Hashimoto, Masakatsu, to Mochida Seiyaku Kabushiki Kaisha. Immunochemical process of measuring physiologically active substances. 4,248,965, Cl. 435-7.000.

Mochida Seiyaku Kabushiki Kaisha: *See*—
Mochida, Ei; Ogawa, Nobuhisa; Shinkai, Hiroyuki; and Hashimoto, Masakatsu, 4,248,965, Cl. 435-7.000.

Mochizuki, Asaji, to Showa Musen Kogyo Kabushiki Kaisha. Vehicular side mirror control. 4,249,086, Cl. 307-10.00R.

Modular Distribution Systems Limited: *See*—
Allen, David; and Rowley, Robert J., 4,248,467, Cl. 294-67.00R.

Moe, Walter: *See*—
Kirby, James S.; Jones, Lawrence; Moe, Walter; and Diker, Charles M., 4,248,012, Cl. 46-262.000.

Moertel, George B., to Textron, Inc. Fastener stringer with tubular filament element. 4,247,968, Cl. 24-205.13C.

Mogi, Toshio, to Lux Audio Kabushiki Kaisha. Cassette tape storing case. 4,248,393, Cl. 242-199.000.

Mohnhaupt, Dietrich F. A., to Saseb Aktiengesellschaft. Lock for the doors of automobiles. 4,249,161, Cl. 340-52.00D.

Moinet, Gerard H.: *See*—
Bourgery, Guy R.; Lacour, Alain P.; Moinet, Gerard H.; Pourrias, Bernard M.; and Ruch, Anne-Marie P., 4,248,788, Cl. 260-340.300.

Molenaar, Arian: *See*—
Heijnen, Godefridus H. C.; and Molenaar, Arian, 4,248,633, Cl. 106-1.230.

Molinari, Thomas E., to RCA Corporation. Continuous tuning arrangement for a multiband television receiver. 4,249,255, Cl. 455-176.000.

Molinari, Thomas E.; and Griepentrog, Dal F., to RCA Corporation. Continuous tuning arrangement for a multiband television receiver. 4,249,256, Cl. 455-180.000.

Molins Limited: *See*—
Labbe, Francis A. M., 4,248,139, Cl. 493-4.000.

Mommessin, Pierre R.; Castano, John R.; Rankin, John G.; and Weiss, Mary L., to Shell Oil Company. Process for determining the API gravity of oil by FID. 4,248,599, Cl. 23-230.0HC.

Monsanto Company: *See*—
Goettler, Lloyd A., 4,248,743, Cl. 260-17.4BB.
Goodin, Richard D.; Hallcher, Richard C.; and Baizer, Manuel M., 4,248,678, Cl. 204-59.00R.
Morgan, Albert W.; and Ribaudo, Roland G., 4,248,929, Cl. 428-288.000.
Sullivan, Alfred B.; and Wise, Raleigh W., 4,248,805, Cl. 260-780.000.
Williams, Charles R., 4,248,755, Cl. 260-29.6TA.

Monsanto Research Corporation: *See*—
Marcum, Alfred L., 4,248,096, Cl. 73-828.000.

Monterey Manufacturing, Inc.: *See*—
Hall, Charles P., 4,247,962, Cl. 5-450.000.

Moog Inc.: *See*—
Caruso, John T., 4,248,137, Cl. 91-375.00R.

Mooney, Donald B.: *See*—
Balyoz, John; Chang, Chi S.; Fox, Barry C.; Palmieri, John A.; Ghafghaichi, Majid; Jen, Teh-Sen; and Mooney, Donald B., 4,249,193, Cl. 357-40.000.

Moore, Fred J. Gauge device for hypodermic syringes. 4,248,225, Cl. 128-218.00C.

Moore Industries Inc.: *See*—
Moore, Leonard; and Durr, Jerry A., 4,249,228, Cl. 361-388.000.

Moore, J. Jearl. Spinner type water winch. 4,248,382, Cl. 239-189.000.

Moore, Leonard; and Durr, Jerry A., to Moore Industries Inc. Housing for an electrical circuit. 4,249,228, Cl. 361-388.000.

Moore, Robert W., Jr.; and Weinrich, Stanley C., to Weinrich, Stanley C. Scavenger system for anesthesia circuits. 4,248,219, Cl. 128-205.170.

Morbitzer, Leo: *See*—
Arnold, Bernhard; Kowitz, Friedrich; Kuhlmann, Dieter; Ott, Karl-Heinz; and Morbitzer, Leo, 4,248,778, Cl. 260-23.70M.

Morcher, Bernhard: *See*—
Kolb, Gunter; and Morcher, Bernhard, 4,248,963, Cl. 430-501.000.

More, Anton; and Tosin, Albert, to Wacker-Chemie GmbH. Casting powder for the continuous casting of steel and method for producing the same. 4,248,631, Cl. 75-257.000.

Morgan, Adrian J.; Williams, John K.; and Else, Ronald, to Post Office, The. Electret transducer backplate, electret transducer and method of making an electret transducer. 4,249,043, Cl. 179-111.00E.

Morgan, Albert W.; and Ribaudo, Roland G., to Monsanto Company. Filter media coated with flame resistant compositions. 4,248,929, Cl. 428-288.000.

Morgan, Curtis W.: *See*—
Charnitski, Richard D.; and Morgan, Curtis W., 4,248,244, Cl. 128-706.000.

Morgan, Daniel G., to Tram/Diamond Corporation. Standing wave ratio measuring system. 4,249,127, Cl. 324-57.00R.

Morgan, Kenneth. Can crusher having two movable jaws. 4,248,144, Cl. 100-244.000.

Mori, Toshihiro, to Nippon Electric Co., Ltd. Digital radio pager. 4,249,165, Cl. 340-311.000.

Mori, Yasuki: *See*—
Sasaki, Ryusei; Mori, Yasuki; and Morishita, Hirosada, 4,248,636, Cl. 106-23.000.

Morimoto, Isao: *See*—
Yoshida, Tetsu; and Morimoto, Isao, 4,249,243, Cl. 364-474.000.

Morishita, Hirosada: *See*—
Sasaki, Ryusei; Mori, Yasuki; and Morishita, Hirosada, 4,248,636, Cl. 106-23.000.

Morisi, Franco: *See*—
Marconi, Walter; Bartoli, Francesco; Gianna, Roberto; Morisi, Franco; and Spotorno, Giuseppina, 4,248,704, Cl. 210-632.000.

Morita, Akiyoshi: *See*—
Yasutake, Katsuya; and Morita, Akiyoshi, 4,249,220, Cl. 360-73.000.

Morle, Charles W., to Ransburg Corporation. Electrostatic deposition apparatus. 4,248,386, Cl. 239-707.000.

Mormann, Werner: *See*—
Haas, Peter; Blahak, Johannes; Mormann, Werner; and Kapps, Manfred, 4,248,930, Cl. 428-315.000.

Morris, Anthony F.: *See*—
Escher, Sina D.; and Morris, Anthony F., 4,248,742, Cl. 252-522.00R.

Morris, Frank: *See*—
Hanley, C. John; and Morris, Frank, 4,248,334, Cl. 194-4.00C.

Morris, Kendall B.: *See*—
Akin, Alfred A., Jr.; and Morris, Kendall B., 4,248,496, Cl. 350-10.000.

Morrow, Herbert. Stove, steam cooking and heating system. 4,248,207, Cl. 126-348.000.

Moser, Paul: *See*—
Diggle, Edmund A., Jr.; and Moser, Paul, 4,247,969, Cl. 26-18.600.

Motonami, Masanao; Yasumatsu, Jun; and Kubota, Tatsushi, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Kabushiki Tokai-Rika-Denki Seisakusho. Seatbelt system. 4,248,456, Cl. 280-802.000.

Motor und Turbinen-Union Freidrichshafen GmbH: *See*—
Deutschmann, Herbert; and Geray, Franz, 4,248,198, Cl. 123-559.000.

Motorola, Inc.: *See—*
Bell, Robert R., 4,249,138, Cl. 331-1.00A.
Bickley, Robert H.; and Olivenbaum, James E., 4,249,150, Cl. 333-262.000.
Butler, Walker, 4,249,178, Cl. 343-7.700.
Mouissie, Bob, to Du Pont de Nemours, E. I., and Company. End connector for flexible printed circuits. 4,248,491, Cl. 339-17.00F.
Moyle, Austin. Toothpaste tube holding and closing device. 4,248,361, Cl. 222-179.500.
Moyroud, Louis M. Photocomposing device and method. 4,248,509, Cl. 354-10.000.
MTS Systems Corporation: *See—*
Andersen, Dennis H., 4,248,545, Cl. 403-227.000.
Muchel, Franz; Summerer, Gunther; and Stern, Ekkehard, to Carl Zeiss Stiftung. Ophthalmological instrument. 4,248,505, Cl. 351-7.000.
Muench, Thomas B. Quality-preserving hot-food dispenser. 4,248,358, Cl. 221-150.00A.
Muggli, Jurg, to Cerberus AG. Flame detector. 4,249,168, Cl. 340-578.000.
Muller, Hanns P.: *See—*
de Cleur, Eckhard; Dhein, Rolf; Rudolph, Hans; Kreuder, Hans J.; Muller, Hanns P.; Schafer, Walter; Wagner, Kuno; and Findeisen, Kurt, 4,248,978, Cl. 525-124.000.
Muller, Hermann, to Aktiengesellschaft Cilander. Apparatus for the continuous wet treatment of strand-like textile materials. 4,248,066, Cl. 68-43.000.
Murakami, Hisamichi: *See—*
Yamaguchi, Akihiro; Kobayashi, Tadashi; Yamaguchi, Keisaburo; and Murakami, Hisamichi, 4,248,804, Cl. 568-47.000.
Murakami, Ichiro; Sasaki, Shosaku; and Tanimura, Masamitsu, to Toray Silicone Company, Ltd. Compositions for forming peelable films. 4,248,750, Cl. 260-29.1SB.
Murakami, Tsugio; Kikuchi, Mitsuo; and Igawa, Kazushige, to Toyo Soda Manufacturing Co., Ltd. Dihydrate of calcium hypochlorite and method for manufacture thereof. 4,248,848, Cl. 423-474.000.
Murata Manufacturing Co., Ltd.: *See—*
Nakamura, Takeshi, 4,249,162, Cl. 340-148.000.
Murphy, James A.: *See—*
Herczog, Andrew; and Murphy, James A., 4,248,231, Cl. 128-303.140.
Murphy, Richard F.: *See—*
Chierici, Osvaldo F.; and Murphy, Richard F., 4,248,158, Cl. 105-282.00R.
Murray, Coyt E.; and Workman, Jack L. Plastic pipe fitting. 4,248,460, Cl. 285-363.000.
Murro, Ronald P. Method and apparatus for forming an open mesh criss-cross yarn net. 4,248,650, Cl. 156-181.000.
Myers, John D.; and Vollers, Charles S., to Kigre, Inc. Laser phosphate glass compositions. 4,248,732, Cl. 252-301.60P.
Myles, Thomas A., to Carborundum Company, The. Refractory moldable composition. 4,248,752, Cl. 260-29.10R.
Nagai, Tamotsu: *See—*
Tamura, Sakae; Okabe, Kyoji; Fukutake, Tsuyoshi; Taguchi, Seiji; Nagai, Tamotsu; Saino, Mitsuo; and Iwamura, Tadaaki, 4,248,625, Cl. 75-41.000.
Nagano, Katsumasa: *See—*
Sekiguchi, Shizuo; Nagano, Katsumasa; Miyawaki, Yozo; and Kitano, Kyozo, 4,248,793, Cl. 260-513.00T.
Nagy, Lajos: *See—*
Szekely, Istvan; Lovasz, Marianna, nee Gaspar; Kovacs, Gabor; Soos, Rudolf; Nagy, Lajos; and Koszegi, 4,248,888, Cl. 424-306.000.
Nakamori, Masami, to Perkins Research & Mfg. Co., Inc. Fiber optics communication system. 4,249,266, Cl. 455-608.000.
Nakamura, Kotaro: *See—*
Hara, Hiroshi; Nakamura, Kotaro; and Suzuki, Yoshiaki, 4,248,949, Cl. 430-17.000.
Nakamura, Munekazu: *See—*
Wakabayashi, Motoyoshi; Ono, Takeo; Togari, Osamu; and Nakamura, Munekazu, 4,248,852, Cl. 423-626.000.
Nakamura, Taiji. Automatic tape engaging and securing device. 4,247,977, Cl. 29-566.100.
Nakamura, Takeshi, to Murata Manufacturing Co., Ltd. Remote control switch assembly. 4,249,162, Cl. 340-148.000.
Nakanishi, Akira; and Miyakoshi, Kazumitsu, to Sharp Kabushiki Kaisha. Confirmation sound generation for indicating effective key input operation. 4,249,245, Cl. 364-710.000.
Nakano, Hisashi: *See—*
Oda, Kanji; and Nakano, Hisashi, 4,249,259, Cl. 455-182.000.
Nakashima, Toshihide: *See—*
Fuchigami, Yoshio; and Nakashima, Toshihide, 4,248,736, Cl. 252-428.000.
Nakayama, Kiyoshi: *See—*
Kamo, Seiichi; Watanabe, Tetzuo; and Nakayama, Kiyoshi, 4,248,617, Cl. 71-42.000.
Nakayama, Shigeru, to Olympus Optical Co., Ltd. Heat fixing device for electrographic apparatus. 4,249,064, Cl. 219-216.000.
Nakazawa, Masao: *See—*
Baba, Takaaki; Kitani, Teruo; Nakazawa, Masao; Yoshino, Hirokazu; Fujita, Tatsuo; and Tsuboka, Eiichi, 4,249,211, Cl. 358-183.000.
Nalco Chemical Company: *See—*
Allain, Ronald J.; Braithwaite, David G.; and Maniscalco, Joseph P., 4,248,838, Cl. 423-162.000.
Phillips, Kenneth G., 4,248,304, Cl. 166-300.000.
Nancarrow, James H.: *See—*
Egli, Hans; Byrne, Joe L.; and Nancarrow, James H., 4,248,567, Cl. 415-53.00T.
Nanya, Takashi; and Tanaka, Takeo, to Nippon Electric Co., Ltd. Programmable logic array for generating EOR sums of input signals. 4,249,246, Cl. 364-716.000.
Narske, Richard M.: *See—*
Fischer, David J.; Narske, Richard M.; Thomas, John C.; and Worthington, Edward J., Jr., 4,248,972, Cl. 435-292.000.
Nashua Corporation: *See—*
Davis, Austin E., 4,248,522, Cl. 355-10.000.
Nashville Wire Products Manufacturing Co.: *See—*
White, Elzie T., 4,248,352, Cl. 211-88.000.
Nassau Recycle Corporation: *See—*
Budzich, Mieczyslaw; and Fitz, Forest G., Jr., 4,248,353, Cl. 212-128.000.
National Research Development Corporation: *See—*
Scowen, Roger S.; and Rodgers, John L., 4,249,250, Cl. 365-230.000.
Vitols, Reinhards, 4,248,116, Cl. 83-544.000.
National Semiconductor Corporation: *See—*
Widlar, Robert J., 4,249,122, Cl. 323-313.000.
National Service Industries, Inc.: *See—*
Henry, Jerry W., 4,248,657, Cl. 156-443.000.
Natmar, Inc.: *See—*
Clay, Bobby J., 4,248,112, Cl. 83-241.000.
Nava, Pierluigi. Actuating device for the vizors of helmets or similar headgears. 4,247,960, Cl. 2-424.000.
Navarro, Jesus. Automatic dog or cat feeder. 4,248,175, Cl. 119-51.120.
Nawn, George H., to Polaroid Corporation. Photographic processes and products. 4,248,955, Cl. 430-219.000.
NCR Corporation: *See—*
Bader, Leonhard; Giessner, Frank; Pechinger, Ernst; Rombach, Friedrich B.; Ruprich, Wilhelm; Weber, Helmut; and Winter, Hermann, 4,248,823, Cl. 264-156.000.
Patel, Narendra M., 4,249,247, Cl. 364-900.000.
Ned Strongin Associates, Inc.: *See—*
Soriano, Rene, 4,248,433, Cl. 273-275.000.
Needle Industries Limited: *See—*
Kenny, John, 4,248,237, Cl. 128-419.00P.
Needs, Howard C.: *See—*
Haenen, Henricus W. G.; Hesselmann, Gerardus J. M.; and Needs, Howard C., 4,249,208, Cl. 358-164.000.
Neelameggham, Ramaswami: *See—*
Toomey, Robert D.; Davis, Brian R.; Neelameggham, Ramaswami; and Darlington, R. Keith, 4,248,839, Cl. 423-178.000.
Negi, Youji; Iwata, Kouji; and Sakai, Kazuhiko, to Ube-Nitto Kasei Co., Ltd. Elastic strapping band and method for producing same. 4,248,991, Cl. 526-331.000.
Nelboeck-Hochstetter, Michael: *See—*
Batz, Hans-Georg; Horn, Jurgen; Stellner, Klaus; Maier, Josef; Nelboeck-Hochstetter, Michael; and Weimann, Gunter, 4,248,786, Cl. 260-326.260.
Nelson, Terence J.: *See—*
Bonyhard, Peter I.; and Nelson, Terence J., 4,249,249, Cl. 365-36.000.
Ness, Virginia V. Holder for rolls of paper. 4,248,391, Cl. 242-55.540.
Netherton, Lowell E.: *See—*
Patil, Arvind S.; and Netherton, Lowell E., 4,248,765, Cl. 260-42.530.
Netters, Elbert. Furniture construction. 4,248,477, Cl. 297-135.000.
Nettleton, Donald E., Jr.: *See—*
Bradner, William T.; Bush, James A.; and Nettleton, Donald E., Jr., 4,248,970, Cl. 435-253.000.
Neumann, Friedrich: *See—*
Niermann, Hermann; Reichert, Gunter; Ebert, Hans; and Neumann, Friedrich, 4,248,602, Cl. 23-293.00R.
New York Institute of Technology: *See—*
Glenn, William E., 4,248,090, Cl. 73-620.000.
Newcomb, Alan L., to Smith International, Inc. Pressure venting O-ring bearing seal for rock bits. 4,248,484, Cl. 308-8.200.
Newes, Daniel J.: *See—*
Westberg, Walter M.; and Newes, Daniel J., 4,249,226, Cl. 361-223.000.
NGK Spark Plug Co., Ltd.: *See—*
Hattori, Yoshinori; Kawamura, Mitsuyoshi; and Matsuo, Yasushi, 4,248,813, Cl. 264-62.000.
Nickel, Friedhelm: *See—*
Koerner, Gotz; Schmidt, Gunter; and Nickel, Friedhelm, 4,248,590, Cl. 8-128.00A.
Nickel, Horst: *See—*
Scholl, Walter; and Nickel, Horst, 4,248,771, Cl. 260-146.00T.
Nickell, Larry C.: *See—*
Wilson, Marlin V.; Nickell, Larry C.; and McCormack, John L., 4,248,272, Cl. 139-353.000.
Nickola, Richard A., to Inland Steel Company. Hot-dip metallic coatings on low carbon alloy steel. 4,248,908, Cl. 427-156.000.
Nieder, Elmar: *See—*
Engelbrecht, Eckart; and Nieder, Elmar, 4,248,232, Cl. 128-305.000.
Nielsen, Arnold T.: *See—*
Atkins, Ronald L.; Nielsen, Arnold T.; and Norris, William P., 4,248,798, Cl. 564-441.000.
Niermann, Hermann; Reichert, Gunter; Ebert, Hans; and Neumann, Friedrich, to Hoechst Aktiengesellschaft. Production of phosphorus pentasulfide of predetermined reactivity. 4,248,602, Cl. 23-293.00R.

Niess, Eduard; and Hoffmann, Heiner, to Fa. Ingeborg Niess Elektromedizinische Apparate. Suspension arm for E.K.G. suction electrodes. 4,248,243, Cl. 128-696.000.
Nifco Inc.: *See*—
Yuda, Takuo; Tanaka, Toshie; and Watanabe, Koji, 4,248,470, Cl. 294-87.200.
Nippon Electric Co., Ltd.: *See*—
Ito, Yutaka; Inaba, Masao; Mizukami, Mineo; and Shimizu, Mikio, 4,249,198, Cl. 358-13.000.
Ito, Yutaka; Isomura, Yukihiko; Kato, Katsuhisa; Takahashi, Hiroshi; and Inaba, Masao, 4,249,212, Cl. 358-183.000.
Mori, Toshihiro, 4,249,165, Cl. 340-311.000.
Nanya, Takashi; and Tanaka, Takeo, 4,249,246, Cl. 364-716.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Ogita, Minoru, 4,249,261, Cl. 455-305.000.
Yamada, Shigeru, 4,248,119, Cl. 84-1.010.
Nippon Hoso Kyokai: *See*—
Kamegaya, Takeo; Matsuzaki, Hideomi; Kaneko, Ryuichi; and Yokozawa, Minori, 4,249,105, Cl. 313-213.000.
Nippon Kogaku K.K.: *See*—
Takahashi, Fumio, 4,248,506, Cl. 351-6.000.
Nippon Kokan Kabushiki Kaisha: *See*—
Nomura, Hirokazu; and Fujioka, Tadashi, 4,248,372, Cl. 228-32.000.
Nippon Oil Co., Ltd.: *See*—
Hayashi, Shigeyuki; and Isobe, Masao, 4,248,749, Cl. 260-28.5AS.
Uchinuma, Kazuo; and Sasaki, Umekichi, 4,248,726, Cl. 252-52.00A.
Nippon Shokubai Kagaku Kogyo Co. Ltd.: *See*—
Mitsuhata, Masashi; Kumazawa, Toshihiko; and Kiguchi, Isamu, 4,248,740, Cl. 252-463.000.
Nippon Soken, Inc.: *See*—
Matsui, Takeshi; Kohama, Tokio; Kawai, Hisasi; Nishimatsu, Akira; Ina, Toshikazu; Nohira, Hidetaka; and Kobashi, Kiyoshi, 4,248,187, Cl. 123-568.000.
Oishi, Kazuo; Hinachi, Matatoyo; Matsui, Takeshi; and Kotera, Masao, 4,249,176, Cl. 343-6.5LC.
Nippon Steel Corporation: *See*—
Uchida, Hiromu; and Yanabu, Osamu, 4,248,676, Cl. 204-56.00R.
Nippon Zeon Co., Ltd.: *See*—
Ohishi, Tetsu; Handa, Kohichi; and Ueno, Haruo, 4,248,985, Cl. 525-327.000.
Nisen, Daniel B.: *See*—
Lacy, Lewis L.; Robinson, Michael B.; and Nisen, Daniel B., 4,248,083, Cl. 73-190.00R.
Nishida, Masamitsu: *See*—
Kawashima, Syunichiro; Nishida, Masamitsu; Ueda, Ichiro; and Ouchi, Hiromu, 4,248,727, Cl. 106-46.000.
Nishikaichi, Yuji: *See*—
Hozumi, Keiichi; Nishikaichi, Yuji; Ueda, Masao; Miura, Tatsuya; and Yamamoto, Hirotoshi, 4,249,062, Cl. 219-124.340.
Nishikawa, Masaji, to Olympus Optical Co., Ltd. Illuminating device for use in a copying apparatus, a facsimile apparatus, and the like. 4,248,517, Cl. 355-1.000.
Nishikawa, Masaji, to Olympus Optical Co., Ltd. Electrophotographic copying apparatus. 4,248,518, Cl. 355-3.0CH.
Nishimatsu, Akira: *See*—
Matsui, Takeshi; Kohama, Tokio; Kawai, Hisasi; Nishimatsu, Akira; Ina, Toshikazu; Nohira, Hidetaka; and Kobashi, Kiyoshi, 4,248,187, Cl. 123-568.000.
Nishimura, Haruki: *See*—
Sawayama, Tadahiro; Kinugasa, Hiroaki; Nishimura, Haruki; Takeyama, Kunihiko; and Hosoki, Kanoo, 4,248,883, Cl. 424-274.000.
Nissan Motor Company, Limited: *See*—
Fujii, Shin; Ohkawa, Koue; and Seino, Takashi, 4,248,974, Cl. 521-91.000.
Iwanaga, Kazuyoshi; Sugano, Kazuhiko; and Ohtsuka, Kunio, 4,248,106, Cl. 74-868.000.
Iwanaga, Kazuyoshi, 4,248,262, Cl. 137-382.000.
Matsumoto, Toshinori; and Kawamoto, Tamio, 4,248,333, Cl. 192-0.052.
Sumi, Yasuo, 4,248,047, Cl. 60-602.000.
Takeuchi, Yashuhisa; Hatori, Yukiyoshi; and Ohwada, Masatsugu, 4,248,156, Cl. 104-300.000.
Nitto Chemical Industry Co., Ltd.: *See*—
Watanabe, Ichiro; Satoh, Yoshiaki; and Takano, Takayuki, 4,248,968, Cl. 435-129.000.
Nitz, Jurgen: *See*—
Schminke, Heinz; Krebs, Rudolf; Wendel, Gunter; Schmidt, Hans-Jurgen; Desch, Willy; and Nitz, Jurgen, 4,248,610, Cl. 55-101.000.
NL Industries, Inc.: *See*—
Toomey, Robert D.; Davis, Brian R.; Neelameggham, Ramaswami; and Darlington, R. Keith, 4,248,839, Cl. 423-178.000.
Noerenberg, Marc D.: *See*—
Ware, Lyle A.; and Noerenberg, Marc D., 4,248,247, Cl. 128-798.000.
Noguchi, Masaaki; Tanaka, Yukiyasu; and Igarashi, Isao, to Toyota Jidosha Kogyo Kabushiki Kaisha. Two-stroke cycle diesel engine. 4,248,183, Cl. 123-51.00B.
Nohira, Hidetaka: *See*—
Matsui, Takeshi; Kohama, Tokio; Kawai, Hisasi; Nishimatsu, Akira; Ina, Toshikazu; Nohira, Hidetaka; and Kobashi, Kiyoshi, 4,248,187, Cl. 123-568.000.
Noltner, Gerhard: *See*—
Mayer, Manfred; Noltner, Gerhard; Nowack, Rudolf; and Strobel, Wolfgang, 4,248,819, Cl. 264-109.000.
Nomura, Hiroaki: *See*—
Minami, Isao; Yoshioka, Yoshio; and Nomura, Hiroaki, 4,249,006, Cl. 544-313.000.
Nomura, Hirokazu; and Fujioka, Tadashi, to Nippon Kokan Kabushiki Kaisha. Apparatus for automatically welding corrugated membranes. 4,248,372, Cl. 228-32.000.
Norac Company, Inc., The: *See*—
McCloskey, Chester M.; Fischer, James R.; and Scott, Leonard F., 4,248,785, Cl. 260-326.50A.
Norandy, Inc.: *See*—
Andrews, Norwood H., 4,248,387, Cl. 241-5.000.
Nordson Corporation: *See*—
Hollstein, Thomas E.; Crum, Gerald W.; and Frey, Louis A., 4,248,379, Cl. 239-1.000.
Norlin Industries, Inc.: *See*—
Erickson, Norman; and Meier, James, 4,248,130, Cl. 84-434.000.
Hall, George R.; and Hall, Robert J., 4,248,118, Cl. 84-1.010.
Norman, Vello: *See*—
Bryant, Herman G., Jr.; and Norman, Vello, 4,248,251, Cl. 131-17.00R.
Normand Trust: *See*—
Mercier, Jacques H., 4,248,269, Cl. 138-30.000.
Norris, Jerry L.: *See*—
Scarbrough, William L.; Norris, Jerry L.; and Hardin, Joe D., 4,248,305, Cl. 166-305.00D.
Norris, William P.: *See*—
Atkins, Ronald L.; Nielsen, Arnold T.; and Norris, William P., 4,248,798, Cl. 564-441.000.
Northern Telecom Limited: *See*—
Eberle, Gernot; Walker, Anthony R.; Goodchild, William; and Humbert-Droz, Patrice L. D., 4,249,180, Cl. 375-2.000.
Skillen, Richard P.; and King, Frederick D., 4,248,035, Cl. 57-6.000.
Norton-Harty Colliery Engineering Limited: *See*—
Wallace, Walter M.; and Craven, Geoffrey F., 4,248,702, Cl. 209-455.000.
Nosler, John C. Electro-optical distance-measuring system. 4,248,532, Cl. 356-1.000.
Novicky, Nick N. Oxygen permeable hard and semi-hard contact lens compositions, methods and articles of manufacture II. 4,248,989, Cl. 526-264.000.
Novoa, Jorge O. B.; and Ramirez, Julian S., to Hylsa, S.A. Use of prereduced ore in a blast furnace. 4,248,624, Cl. 75-41.000.
Novotny, John, Jr.: *See*—
Datta, Pabitra; Westdale, Virgil W.; and Novotny, John, Jr., 4,248,954, Cl. 430-97.000.
Nowack, Rudolf: *See*—
Mayer, Manfred; Noltner, Gerhard; Nowack, Rudolf; and Strobel, Wolfgang, 4,248,819, Cl. 264-109.000.
Noyes, Wilfred C. Fluid gear coupling. 4,248,332, Cl. 192-61.000.
Nuovo Pignone S.p.A.: *See*—
Vinciguerra, Costantino, 4,248,915, Cl. 427-292.000.
Oak Industries, Inc.: *See*—
Larson, Willis A., 4,249,044, Cl. 200-5.00A.
Oberg, David J.: *See*—
Masar, Edward J.; Oberg, David J.; and Williams, Ralph A., 4,248,744, Cl. 260-17.4SG.
O'Brien, Harold A., Jr.: *See*—
Mirzadeh, Saed; Whipple, Richard E.; Grant, Patrick M.; and O'Brien, Harold A., Jr., 4,248,730, Cl. 252-301.10R.
Occidental Research Corporation: *See*—
White, William R., 4,248,696, Cl. 209-1.000.
Oda Gosen Kogyo Kabushiki Kaisha: *See*—
Takai, Isao, 4,248,038, Cl. 57-336.000.
Oda, Kanji; and Nakano, Hisashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Digital channel selection apparatus. 4,249,259, Cl. 455-182.000.
Odell, Jack L., II: *See*—
Hawley, Royal T.; Veale, John P.; and Odell, Jack L., II, 4,248,019, Cl. 51-45.000.
Odham, Carl J., to Stedman Corporation. Lock-stitch knitted elastic fabric. 4,248,064, Cl. 66-192.000.
Oesterlin, Rudolf: *See*—
Bell, Malcolm R.; and Oesterlin, Rudolf, 4,248,784, Cl. 260-326.200.
Oettell, Michael: *See*—
Ponsold, Kurt; Hubner, Michael; and Oettell, Michael, 4,248,790, Cl. 260-397.400.
Ogata, Masaru; Watanabe, Yoshihachi; Matsumoto, Hiroshi; and Tawara, Katsuya, to Shionogi & Co., Ltd. Phenyl isothiocyanate derivatives and their production. 4,248,869, Cl. 424-248.500.
Ogata, Yuzuru: *See*—
Kinoshita, Tsukuru; Ogata, Yuzuru; and Suzue, Masayoshi, 4,248,845, Cl. 423-300.000.
Ogawa, Francis T., to Rollei of America, Inc. Light digitizing circuit for an electronic flash device. 4,249,109, Cl. 315-151.000.
Ogawa, Nobuhisa: *See*—
Mochida, Ei; Ogawa, Nobuhisa; Shinkai, Hiroyuki; and Hashimoto, Masakatsu, 4,248,965, Cl. 435-7.000.
Ogawa, Tadatoshi: *See*—
Kojimoto, Susumu; Ogawa, Tadatoshi; and Abe, Youzou, 4,248,651, Cl. 156-198.000.
Ogden Industries Pty. Limited: *See*—
Esser, Hans J.; and Dunphy, Gerald F., 4,248,068, Cl. 70-134.000.

Ogita, Minoru, to Nippon Gakki Seizo Kabushiki Kaisha. Superheterodyne radio receiver with nearby-station interference detection. 4,249,261, Cl. 455-305.000.

O'Hanlon, Peter J.: *See*—
Rogers, Norman H.; and O'Hanlon, Peter J., 4,248,887, Cl. 424-283.000.

Ohara, Katsunobu: *See*—
Ando, Yujiro; and Ohara, Katsunobu, 4,248,951, Cl. 430-53.000.

Ohaver, David S.: *See*—
Audiffred, Sidney J., Jr.; and Ohaver, David S., 4,248,330, Cl. 192-4.00C.

Ohishi, Tetsu; Handa, Kohichi; and Ueno, Haruo, to Nippon Zeon Co., Ltd. Sulfur-curable acrylic rubber composition. 4,248,985, Cl. 525-327.000.

Ohkawa, Koue: *See*—
Fujii, Shin; Ohkawa, Koue; and Seino, Takashi, 4,248,974, Cl. 521-91.000.

Ohls, Per-Erik; and Soininen, Mauri, to Valmet Oy Per-Erik Ohls. Method for controlling the moisture content of a web of sheet material. 4,247,990, Cl. 34-23.000.

Ohlson, Edward L., to Prime Line Industries, Inc. Foldable stroller. 4,248,443, Cl. 280-39.000.

Ohtani, Masami: *See*—
Watanabe, Risaburo; Ohtani, Masami; and Hashizume, Naoki, 4,248,575, Cl. 418-93.000.

Ohtsuka, Kunio: *See*—
Iwanaga, Kazuyoshi; Sugano, Kazuhiko; and Ohtsuka, Kunio, 4,248,106, Cl. 74-868.000.

Ohwada, Masatsugu: *See*—
Takeuchi, Yashuhisa; Hatori, Yukiyoshi; and Ohwada, Masatsugu, 4,248,156, Cl. 104-300.000.

Oikawa, Mitsuru, to Hitachi, Ltd. Method for master pattern production. 4,248,947, Cl. 430-5.000.

Oishi, Kazuo; Hinachi, Matatoyo; Matsui, Takeshi; and Kotera, Masao, to Nippon Soken, Inc. Following distance measuring communication system. 4,249,176, Cl. 343-6.5LC.

Oka, Hidehiko; Terahara, Akira; and Endo, Akira, to Sankyo Company Limited. 3,5-Dihydroxypentanoic ester derivatives having antihyperlipaemic activity. 4,248,889, Cl. 424-308.000.

Okabe, Kyoji: *See*—
Tamura, Sakae; Okabe, Kyoji; Fukutake, Tsuyoshi; Taguchi, Seiji; Nagai, Tamotsu; Saino, Mitsuo; and Iwamura, Tadaaki, 4,248,625, Cl. 75-41.000.

Okada, Fumio, to Director of National Research Institute of Tea. Process for producing catechins. 4,248,789, Cl. 260-345.200.

Okamura, Kiyohito: *See*—
Yajima, Seishi; Okamura, Kiyohito; and Shishido, Toetsu, 4,248,814, Cl. 264-63.000.

Okazaki, Hisayoshi: *See*—
Kanamaru, Tsuneo; Ishimaru, Takenori; and Okazaki, Hisayoshi, 4,248,892, Cl. 424-317.000.

Okita, Koichi, to Sumitomo Electric Industries, Ltd. Asymmetric porous film materials and process for producing same. 4,248,924, Cl. 428-212.000.

Okumura, Hiroyuki, to Tokyo Shibaura Denki Kabushiki Kaisha. Vacuum switch. 4,249,050, Cl. 200-144.00B.

Olivenbaum, James E.: *See*—
Bickley, Robert H.; and Olivenbaum, James E., 4,249,150, Cl. 333-262.000.

Olivier, Paul D. Electrolytic chlorine generator. 4,248,715, Cl. 204-260.000.

Olsson, Torsten, to Aktiebolaget Asea-Atom. Method of detecting leakage of radioactive gas from a nuclear fuel assembly. 4,248,666, Cl. 176-19.0LD.

Olympus Optical Co., Ltd.: *See*—
Hijikata, Kazuo, 4,248,536, Cl. 356-416.000.
Nakayama, Shigeru, 4,249,064, Cl. 219-216.000.
Nishikawa, Masaji, 4,248,517, Cl. 355-1.000.
Nishikawa, Masaji, 4,248,518, Cl. 355-3.0CH.
Yoshida, Masahide, 4,248,344, Cl. 206-387.000.

Omae, Tsutomu; and Matuta, Tosihiko, to Hitachi, Ltd. Controller for power converter. 4,249,236, Cl. 363-87.000.

O'Neil, Gerald D., to AMSTED Industries Incorporated. Railway car truck load indicator. 4,248,318, Cl. 177-137.000.

Onken, Carl H., Jr.: *See*—
Wagster, Robert P.; and Onken, Carl H., Jr., 4,248,411, Cl. 269-67.000.

Ono, Takeo: *See*—
Wakabayashi, Motoyoshi; Ono, Takeo; Togari, Osamu; and Nakamura, Munekazu, 4,248,852, Cl. 423-626.000.

Opuszenski, Theodore: *See*—
Rovin, Herman; Opuszenski, Theodore; and Pellicano, Joseph, 4,248,414, Cl. 493-416.000.

Orban Associates, Inc.: *See*—
Orban, Robert A., 4,249,042, Cl. 179-15.55R.

Orban, Robert A., to Orban Associates, Inc. Multiband cross-coupled compressor with overshoot protection circuit. 4,249,042, Cl. 179-15.55R.

Orem, Roland L.: *See*—
Hein, Paul R.; Yang, Michael W.; Irvin, Robert A.; Bauer, Steven E.; and Orem, Roland L., 4,248,960, Cl. 430-306.000.

Ortega, Hugh R. Heat-transfer component. 4,248,210, Cl. 126-444.000.

Orthey, George F., Jr. Auxiliary draft device for fireplace. 4,248,206, Cl. 126-143.000.

Osborn Manufacturing Corporation, The: *See*—
Hermes, Rudolf, 4,248,290, Cl. 164-154.000.

Osegowitsch, Viktor: *See*—
Fernandez, Avelino; Glass, Josef; and Osegowitsch, Viktor, 4,248,515, Cl. 354-321.000.

Ostrowski, E. A., to Singer Company, The. Reduced noise water valve provided with flow control. 4,248,270, Cl. 138-45.000.

Osugi, Motoyoshi: *See*—
Inamoto, Yoshiaki; Osugi, Motoyoshi; and Kashihara, Eiji, 4,248,891, Cl. 424-316.000.

Otis Engineering Corporation: *See*—
Boyle, William G., 4,247,985, Cl. 33-178.00F.
Churchman, Ronald K., 4,248,302, Cl. 166-272.000.

Otisca Industries Limited: *See*—
Keller, Douglas V., Jr., 4,248,698, Cl. 209-5.000.

Otsuka Chemical Co., Ltd.: *See*—
Kinoshita, Tsukuru; Ogata, Yuzuru; and Suzue, Masayoshi, 4,248,845, Cl. 423-300.000.

Ott, Karl-Heinz: *See*—
Arnold, Bernhard; Kowitz, Friedrich; Kuhlmann, Dieter; Ott, Karl-Heinz; and Morbitzer, Leo, 4,248,778, Cl. 260-23.70M.

Otto, Paul R.: *See*—
Mandel, Alan F.; Capuano, Louis M.; Otto, Paul R.; and Eichler, Kenneth M., 4,248,327, Cl. 187-29.00R.

Ouchi, Hiromu: *See*—
Kawashima, Syunichiro; Nishida, Masamitsu; Ueda, Ichiro; and Ouchi, Hiromu, 4,248,727, Cl. 106-46.000.

Owen, Thomas E., to United States of America, Commerce. Method and apparatus for measuring electrostatic charge density. 4,249,131, Cl. 324-452.000.

Owens-Corning Fiberglas Corporation: *See*—
Marzocchi, Alfred; Roberts, Michael C.; and Bolen, Charles E., 4,248,936, Cl. 428-391.000.
Seng, Stephen; Henry, Richard K.; Propster, Mark A.; and Hohman, Charles M., 4,248,615, Cl. 65-27.000.
Seng, Stephen; Henry, Richard K.; Propster, Mark A.; and Hohman, Charles M., 4,248,616, Cl. 65-335.000.

Owens-Illinois, Inc.: *See*—
Heckman, Russell W., 4,248,030, Cl. 53-397.000.
Lovalenti, Sam, 4,249,075, Cl. 250-223.00B.
Pei, Yu K., 4,248,297, Cl. 165-166.000.

Ozaki, Masahiko: *See*—
Kobashi, Toshiyuki; Ozaki, Masahiko; and Abe, Noboru, 4,248,812, Cl. 264-51.000.

Pacific-Atlantic Products, Ltd.: *See*—
McNellis, John R., 4,248,002, Cl. 43-27.400.

Packard Instrument Company, Inc.: *See*—
Kaartinen, Niilo H.; and Juhala, Pentti J., 4,248,259, Cl. 137-334.000.

Pako Corporation: *See*—
Grooters, James D., 4,248,516, Cl. 354-321.000.

Palmieri, John A.: *See*—
Balyoz, John; Chang, Chi S.; Fox, Barry C.; Palmieri, John A.; Ghafghaichi, Majid; Jen, Teh-Sen; and Mooney, Donald B., 4,249,193, Cl. 357-40.000.

Papa, Sisto S.; and Ferrario, Renzo, to Aziende Colori Nazionali Affini Acna S.p.A. Symmetrical trisazo dye obtained by coupling tetrazotized 4-4'-diaminozobenzene with 2-carboxymethylamin0-8-naphthol-6-sulphonic acid. 4,248,776, Cl. 260-173.000.

Papst, Gero; Ropke, Gunther; and Topfer, Hans J., deceased (by Block, Marion Margret Gesine Topfer nee, heir), to Hamburger Stahlwerke GmbH. Process for the direct reduction of iron ores. 4,248,623, Cl. 75-35.000.

Parcor: *See*—
Maffrand, Jean-Pierre, 4,248,890, Cl. 424-309.000.

Park, Sae-Soon; and Jung, Han-Joo. Portable luminaire with fluorescent lantern. 4,249,234, Cl. 362-228.000.

Parrott, George A., to Dresser Europe SA. End cutting unit for a mining machine. 4,248,483, Cl. 299-53.000.

Parry, John C. Apparatus for application of plastics stretch films. 4,248,392, Cl. 242-96.000.

Parsons, Charles L., to Hercules Incorporated. Process for double coating paper and product thereof. 4,248,939, Cl. 428-508.000.

Parstorfer, Richard: *See*—
Liertz, Heinrich; Kunze, Dieter; and Parstorfer, Richard, 4,248,499, Cl. 350-96.210.

Paschke, Edward E.: *See*—
Udovich, Carl A.; Paschke, Edward E.; and Fields, Ellis K., 4,248,998, Cl. 528-296.000.

Patchell, John W.: *See*—
Harman, R. Keith; and Patchell, John W., 4,249,207, Cl. 358-108.000.

Pate, Harold T.; and Fochler, Helmut P., to Indian Head Inc. Flexible conduit system. 4,248,459, Cl. 285-319.000.

Patel, Narendra M., to NCR Corporation. Refresh system for dynamic RAM memory. 4,249,247, Cl. 364-900.000.

Patent Technology, Inc.: *See*—
Christensen, Lyle S.; and Russel, Ocrel M., 4,248,897, Cl. 426-36.000.

Patent-Treuhand-Gesellschaft fur elektrische Gluehlampen mbH: *See*—
Krieg, Rudolf; Dobrusskin, Alexander; and Krense, Horst, 4,249,102, Cl. 313-116.000.

Paterson, Malcolm M.; and Fabuss, Bela M., to Raytheon Company. Transit materials separator. 4,248,700, Cl. 209-212.000.

Patil, Arvind S.; and Netherton, Lowell E., to BASF Wyandotte Corporation. Surface polymerization on pigments for improved dispersibility. 4,248,765, Cl. 260-42.530.

Paton, Boris E.; Lebedev, Vladimir K.; Kuchuk-Yatsenko, Sergei I.; Sakharnov, Vasily A.; Galyan, Boris A.; Dobrovolsky, Stanislav D.; and Sidorenko, Mikhail N. Ring transformer for resistance butt welders. 4,249,153, Cl. 336-82.000.

Pattee, Harry E.: *See*—
Linse, Vonne D.; and Pattee, Harry E., 4,248,373, Cl. 228-107.000.

Patyk, Fred; and Wessman, Elbert F. T. High speed marking apparatus. 4,248,145, Cl. 101-77.000.

Paulin, John M.; and Fournier, Richard W., to James River Graphics Inc. Technique for making electrical ground contact with the intermediate conductive layer of an electrostatographic recording member. 4,248,952, Cl. 430-62.000.

Paurat, Friedrich W.; and Paurat, Roland. Trench excavating and shoring apparatus. 4,247,997, Cl. 37-82.000.

Paurat, Roland: *See*—
Paurat, Friedrich W.; and Paurat, Roland, 4,247,997, Cl. 37-82.000.

Pecchioni, Vito. Integral unit comprising a raisable and tiltable door panel member and a frame structure therefor containing the driving mechanism. 4,248,016, Cl. 49-200.000.

Pechinger, Ernst: *See*—
Bader, Leonhard; Giessner, Frank; Pechinger, Ernst; Rombach, Friedrich B.; Ruprich, Wilhelm; Weber, Helmut; and Winter, Hermann, 4,248,823, Cl. 264-156.000.

Pedain, Josef; and Thoma, Wilhelm, to Bayer Aktiengesellschaft. Reverse coating textiles with polyurethane solutions. 4,248,910, Cl. 427-208.400.

Pedain, Josef: *See*—
Konig, Eberhard; Pedain, Josef; and Koch, Hans-Joachim, 4,248,756, Cl. 260-31.20N.

Peeples, Denny L.; and Flory, Donald M., to General Motors Corporation. Hydraulic ratio changing booster. 4,248,135, Cl. 91-49.000.

Pei, Yu K., to Owens-Illinois, Inc. Glass-ceramic article and method of making same. 4,248,297, Cl. 165-166.000.

Pellicano, Joseph: *See*—
Rovin, Herman; Opuszenski, Theodore; and Pellicano, Joseph, 4,248,414, Cl. 493-416.000.

Penman, Arthur W.: *See*—
Locke, Merrel J.; and Penman, Arthur W., 4,248,349, Cl. 206-538.000.

Pennwalt Corporation: *See*—
Conkling, William C., 4,248,690, Cl. 204-268.000.
Wagle, Uday D.; and Belford, Timothy J., 4,248,800, Cl. 564-464.000.

PepsiCo Inc.: *See*—
Hanley, C. John; and Morris, Frank, 4,248,334, Cl. 194-4.00C.

Perkin-Elmer Corporation, The: *See*—
Watkin, Theodore, 4,248,508, Cl. 353-114.000.

Perkins, Allen M.: *See*—
Atkinson, Alan W.; Clucas, Richard H.; Lancaster, Robert A.; and Perkins, Allen M., 4,248,664, Cl. 162-145.000.

Perkins Research & Mfg. Co., Inc.: *See*—
Nakamori, Masami, 4,249,266, Cl. 455-608.000.

Pernicano, Vincent S.; and Wright, Michael R. Reflective garment and method of manufacturing same. 4,248,500, Cl. 350-98.000.

Perrella, Guido; and Thompson, William E., to DBM Industries Limited. Die casting machine. 4,248,289, Cl. 164-153.000.

Perricone, Elena: *See*—
Viglia, Aurelio; Fascetti, Eugenio; Perricone, Elena; and Degen, Ludwig, 4,248,967, Cl. 435-106.000.

Perry, Vinson R.; and Ryan, John O., to Ampex Corporation. Circuit for frequency selective coring of a video signal. 4,249,202, Cl. 358-36.000.

Persson, Anders: *See*—
Bergstrom, Jan; Bertilson, Hans; Brogardh, Torgny; and Persson, Anders, 4,249,076, Cl. 250-227.000.

Pessier, Rudolph C. O.: *See*—
Cunningham, Robert A.; and Pessier, Rudolph C. O., 4,248,314, Cl. 175-344.000.

Peters, Margot Elizabeth: *See*—
Peters, Melville F., 4,248,643, Cl. 136-248.000.

Peters, Melville F., to Peters, Walter Todd; Peters, Margot Elizabeth; Kronman, Albert F.; Steller, Arthur H.; and Steller, Grace B. Solar energy conversion panel. 4,248,643, Cl. 136-248.000.

Peters, Walter Todd: *See*—
Peters, Melville F., 4,248,643, Cl. 136-248.000.

Peterson, Jerry D.; and Knief, Gerald L., to Ritchie Industries, Inc. Animal waterer with recirculating water system. 4,248,177, Cl. 119-73.000.

Petrolite Corporation: *See*—
Quinlan, Patrick M., 4,248,796, Cl. 564-285.000.

Petukhov, Vadim D.; Gaun, Viktor A.; and Bobrov, Oleg I. Impact mechanism. 4,248,133, Cl. 91-20.000.

Petvai, Steve I.: *See*—
Gartner, Helmut M.; Petvai, Steve I.; Sarkary, Homi G.; and Schnitzel, Randolph H., 4,248,688, Cl. 204-192.00E.

Pfizer Inc.: *See*—
Sarges, Reinhard; and Schnur, Rodney C., 4,248,882, Cl. 424-273.00R.

Pharmindustrie: *See*—
Legrand, Jean-Jacques; and Renault, Christain L. A., 4,248,884, Cl. 424-274.000.

Phelps, Melvin B. Convertible seat assembly. 4,248,476, Cl. 297-118.000.

Philip Morris Incorporated: *See*—
Lendvay, Andrew T.; and Spann, Billy M., 4,248,252, Cl. 131-140.00P.

Phillips, Benjamin: *See*—
McNeil, Daniel W.; and Phillips, Benjamin, 4,249,020, Cl. 560-214.000.

Phillips, Kenneth G., to Nalco Chemical Company. Large scale production of inexpensive flooding polymers for tertiary oil recovery. 4,248,304, Cl. 166-300.000.

Phillips Petroleum Company: *See*—
Banasiak, Dennis S., 4,248,738, Cl. 252-431.00R.
Chapman, Charles C.; and Hann, Paul D., 4,249,030, Cl. 585-716.000.
Drake, Charles A., 4,248,799, Cl. 564-491.000.
McDaniel, Max P.; and Welch, Melvin B., 4,248,735, Cl. 252-428.000.
Wright, Roy F., 4,248,758, Cl. 260-33.6AQ.

Pieski, Edwin T.; and Sashihara, Thomas F., to Du Pont de Nemours, E. I., and Company. Nonrandom copolymers of ethylene and unsaturated acid. 4,248,990, Cl. 526-317.000.

Pietruck, Horst: *See*—
Gerigk, Gunter; Klendauer, Wolfgang; Pietruck, Horst; and Hammer, Klaus-Dieter, 4,248,912, Cl. 427-230.000.

Pircher, Georges, to Thomson-CSF. Laser gyrometer having the two beams emerging from the two ends of the fiber forming two adjacent light parts of a single beam. 4,248,535, Cl. 356-350.000.

Pirzer, Hans: *See*—
Sterzel, Hans-Josef; Schmidt, Franz; and Pirzer, Hans, 4,248,996, Cl. 528-272.000.

Pitchford, Robert L., Jr. Automatic douche mechanism. 4,248,226, Cl. 128-229.000.

Pitkanen, Alan R. Balloon ejecting device. 4,248,008, Cl. 46-88.000.

Pitney Bowes Inc.: *See*—
Gluck, Julius, 4,249,111, Cl. 315-360.000.
Pritchett, Wayne W.; and Bleggi, Henry, 4,249,080, Cl. 250-557.000.

Plaskolite, Inc.: *See*—
Casamayor, Jorge, 4,248,018, Cl. 49-504.000.

Platt Saco Lowell Limited: *See*—
Martin, Charles R.; Tarbox, Philip B.; and Yates, Stephen W., 4,248,037, Cl. 57-263.000.

Plueddemann, Edwin P., to Dow Corning Corporation. Method of producing improved vinyl chloride plastisol coating compositions. 4,248,761, Cl. 260-42.000.

Plumadore, John D.: *See*—
Brown, Lee R.; Herrera, Jose L.; and Plumadore, John D., 4,248,521, Cl. 355-3.00R.

Pneumo Corporation: *See*—
Bradley, Charles D., Jr., 4,248,486, Cl. 308-72.000.

Pohlig-Heckel-Bleichert Vereinigte Maschinenfabriken: *See*—
Zimmer, Karl E., 4,248,337, Cl. 198-301.000.

Polaroid Corporation: *See*—
Baker, Philip G.; Bing, Herbert A.; and Seiden, Myron A., 4,248,510, Cl. 354-109.000.
Czumak, Frank M., 4,248,507, Cl. 352-130.000.
Nawn, George H., 4,248,955, Cl. 430-219.000.

Polymer Corporation, The: *See*—
Wertz, William E., 4,248,977, Cl. 525-58.000.

Pommier, Jean: *See*—
Rory, Alain; and Pommier, Jean, 4,248,577, Cl. 425-131.500.

Ponomarev, Vyacheslav A.: *See*—
Popov, Alexandr D.; Solomin, Vladimir A.; Trofimov, Vladimir A.; Mishkovich, Alexandr I.; Ponomarev, Vyacheslav A.; and Leschen, Sergei I., 4,249,114, Cl. 318-115.000.

Pons, Fernand; and Thuillier, Jacques, to Acieries du Manoir Pompey. Nickel- and chromium-base alloys possessing very-high resistance to carburization at very-high temperature. 4,248,629, Cl. 75-122.000.

Ponsold, Kurt; Hubner, Michael; and Oettell, Michael, to Veb Jenapharm. Gona-4,9(10)-dienes and process of producing the same. 4,248,790, Cl. 260-397.400.

Poole, Leonard A., to International Standard Electric Corporation. Serial printer. 4,248,541, Cl. 400-144.200.

Pop, Ioan: *See*—
Ciobanu, Pia; Pop, Ioan; and Virlan, Grigore, 4,248,923, Cl. 428-197.000.

Popov, Alexandr D.; Solomin, Vladimir A.; Trofimov, Vladimir A.; Mishkovich, Alexandr I.; Ponomarev, Vyacheslav A.; and Leschen, Sergei I. Electromechanical energy converter. 4,249,114, Cl. 318-115.000.

Popovich, David T.: *See*—
Hewitt, Larry E.; and Popovich, David T., 4,248,432, Cl. 273-235.00R.

Porta Horse, Inc.: *See*—
Hansen, W. Robert; and Christensen, George C., 4,248,326, Cl. 182-185.000.

Pospisil, Peter: *See*—
Kolb, Bruno; Boege, Dietrich; Pospisil, Peter; and Riegger, Hubert, 4,248,355, Cl. 215-274.000.

Post Office, The: *See*—
Morgan, Adrian J.; Williams, John K.; and Else, Ronald, 4,249,043, Cl. 179-111.00E.

Pourrias, Bernard M.: *See*—
Bourgery, Guy R.; Lacour, Alain P.; Moinet, Gerard H.; Pourrias, Bernard M.; and Ruch, Anne-Marie P., 4,248,788, Cl. 260-340.300.

Powell Industries, Inc.: *See*—
Langill, Addison W., Jr.; and Friedland, Harry, 4,248,263, Cl. 137-454.200.

PPG Industries, Inc.: *See*—
Brown, William J.; and Rowley, James R., 4,248,472, Cl. 296-36.000.
Buchwalter, Stephen L.; Bosso, Joseph F.; and Christenson, Roger M., 4,248,753, Cl. 260-29.2TN.
Carlin, William W.; Darlington, William B.; DuBois, Donald W.; and Woo, Roseanne M., 4,248,680, Cl. 204-98.000.
Cunningham, Hugh, 4,248,689, Cl. 204-252.000.
Temple, Chester S., 4,248,935, Cl. 428-391.000.
Welch, Cletus N.; and Snodgrass, John O., 4,248,679, Cl. 204-98.000.

PPM, Inc.: *See*—
Shofner, Frederick M.; Miller, Arthur C., Jr.; and Kreikebaum, Gerhard, 4,249,244, Cl. 364-525.000.

Prime Line Industries, Inc.: *See*—
Ohlson, Edward L., 4,248,443, Cl. 280-39.000.

Pringle, Ronald E., to Camco, Incorporated. Externally adjusted spring actuated well valve. 4,248,308, Cl. 166-322.000.

Pritchett, Wayne W.; and Bleggi, Henry, to Pitney Bowes Inc. Jam-sensing system and apparatus. 4,249,080, Cl. 250-557.000.

Procter & Gamble Company, The: *See*—
Kitko, David J., 4,248,827, Cl. 422-37.000.
Rubingh, Donn N.; and Stephens, Theodore C., 4,248,729, Cl. 252-174.220.
Spadini, Gianfranco L.; and Tolliday, Ian D., 4,248,928, Cl. 428-286.000.

Produits Chimiques Ugine Kuhlmann: *See*—
Cheminal, Bernard; and Kiener, Paul, 4,248,673, Cl. 203-35.000.

Prodyne Enterprises, Inc.: *See*—
McArdle, Christopher J.; and Simeon, Omer T., 4,247,984, Cl. 30-296.00R.

Propster, Mark A.: *See*—
Seng, Stephen; Henry, Richard K.; Propster, Mark A.; and Hohman, Charles M., 4,248,615, Cl. 65-27.000.
Seng, Stephen; Henry, Richard K.; Propster, Mark A.; and Hohman, Charles M., 4,248,616, Cl. 65-335.000.

Prototech Company: *See*—
Lindstrom, Robert; Allen, Robert J.; and Juda, Walter, 4,248,682, Cl. 204-114.000.

Pullman Incorporated: *See*—
Roldness, David J.; Watson, Thomas H.; and Wonacott, Gary D., 4,248,557, Cl. 410-27.000.

Pulp and Paper Research Institute of Canada: *See*—
Kubes, George J.; MacLeod, James M.; Fleming, Bruce I.; and Bolker, Henry I., 4,248,663, Cl. 162-72.000.

Purinton, Edwin C.; Auger, Robert L.; and Holzinger, Carl S., to Magnavox Government and Industrial Electronics Company. Apparatus and method for theft detection system having different frequencies. 4,249,167, Cl. 340-572.000.

Purves, Robert B.: *See*—
Andersson, Anders O.; and Purves, Robert B., 4,248,093, Cl. 73-656.000.

Puryear, Robert L., to Chemed Corporation. Liquid scouring cleanser. 4,248,728, Cl. 252-103.000.

Puschner, Peter. Method and apparatus for arc welding. 4,249,061, Cl. 219-124.220.

Putt, J. William. Magnetic apparatus for producing movement. 4,249,115, Cl. 318-134.000.

Q Corporation: *See*—
Smith, E. Quimby, Jr., 4,248,048, Cl. 60-645.000.

Queen, Carl J. Liquid soap injector for a water bath spray system. 4,248,266, Cl. 137-564.500.

Queen's University at Kingston: *See*—
Romero-Sierra, Cesar; and Webb, John C., 4,248,734, Cl. 252-400.00R.

Quinlan, Patrick M., to Petrolite Corporation. Quaternary alkynoxymethyl amines. 4,248,796, Cl. 564-285.000.

Quittkat, Wolfram G., to Babcock Krauss-Maffei Industrieanlagen GmbH. Method of calcining sinterable materials to form cement clinker or the like. 4,248,639, Cl. 106-100.000.

Rahav, Amir, to Cardinal Scale Manufacturing Company. Load cell apparatus. 4,248,317, Cl. 177-134.000.

Raible, Donald A.: *See*—
Bentley, Donald J.; and Raible, Donald A., 4,248,828, Cl. 422-47.000.

Ramel. Francois: *See*—
Rousseau, Alain; and Ramel, Francois, 4,248,061, Cl. 62-419.000.

Ramirez, Julian S.: *See*—
Novoa, Jorge O. B.; and Ramirez, Julian S., 4,248,624, Cl. 75-41.000.

Rampignon, Jack. Apparatus for the purification of water possessing solvent waste content. 4,248,710, Cl. 210-104.000.

Ramsey Corporation: *See*—
McCormick, Harold E., 4,248,440, Cl. 277-224.000.

Ramsey, David E., Jr.; and Grindstaff, Lloyd I., to Great Lakes Carbon Corporation. Production of SiC from rice hulls and silica. 4,248,844, Cl. 423-345.000.

Randell, Donald R.: *See*—
Clubley, Brian G.; Davis, Boyce I. D.; Hyde, Thomas G.; Lamb, Frank; and Randell, Donald R., 4,248,976, Cl. 525-2.000.

Randon, Jean L.: *See*—
Blackburn, James B.; and Randon, Jean L., 4,248,815, Cl. 264-71.000.

Rankin, John G.: *See*—
Mommessin, Pierre R.; Castano, John R.; Rankin, John G.; and Weiss, Mary L., 4,248,599, Cl. 23-230.0HC.

Ransburg Corporation: *See*—
Morle, Charles W., 4,248,386, Cl. 239-707.000.

Ranweiler, James G.: *See*—
Aberle, Gary F.; Balm, Gerald J.; Berstis, Viktors; Gregg, Leon E.; Hu, Kuang-Chi; Ranweiler, James G.; Richardson, William C.; Schardt, Terry L.; and Watson, Charles T., 4,249,241, Cl. 364-200.000.

Raue, Roderich, to Bayer Aktiengesellschaft. Preparation of solutions of azo methine basic dyestuffs. 4,248,775, Cl. 260-154.000.

Rayburn, Karen C.: *See*—
Korte, Eugene C.; and Rayburn, Karen C., 4,249,217, Cl. 358-294.000.

Raytheon Company: *See*—
Paterson, Malcolm M.; and Fabuss, Bela M., 4,248,700, Cl. 209-212.000.

Razor Saw Manufacturing Co., Ltd.: *See*—
Tomosada, Masaaki, 4,248,284, Cl. 145-31.00R.

RCA Corporation: *See*—
Boyd, William M., 4,249,214, Cl. 358-186.000.
Griepentrog, Dal F., 4,249,132, Cl. 455-180.000.
Harwood, Leopold A.; and Wittmann, Erwin J., 4,249,199, Cl. 358-19.000.
Hsu, Sheng T., 4,249,095, Cl. 307-350.000.
Lucchi, George A.; and Aires, Ramon H., 4,249,174, Cl. 343-5.00W.
Malchow, Max E., 4,249,137, Cl. 330-283.000.
Molinari, Thomas E., 4,249,255, Cl. 455-176.000.
Molinari, Thomas E.; and Griepentrog, Dal F., 4,249,256, Cl. 455-180.000.
Robbi, Anthony D., 4,249,119, Cl. 318-341.000.
Whitley, George J., 4,248,075, Cl. 72-335.000.
Wolford, James J.; and George, John B., 4,249,089, Cl. 307-140.000.

Real, Kenneth G., to Interface Mechanisms, Inc. Tape guide particularly useful as a print stock guide for impact printers. 4,248,151, Cl. 101-288.000.

Reddi, Lakshmi. Liquid support construction. 4,247,963, Cl. 5-450.000.

Redicon Corporation: *See*—
Bulso, Joseph D., Jr.; and Lewers, William R., 4,248,076, Cl. 72-349.000.

Redlich, Horst: *See*—
Knothe, Herbert; Redlich, Horst; and Roschmann, Klaus, 4,248,438, Cl. 369-127.000.

Reed, Thomas F., to General Tire & Rubber Company, The. Method for obtaining uniformly mixed gases in a ball mold. 4,248,275, Cl. 141-4.000.

Regenerative Environmental Equipment Co., Inc.: *See*—
Benedick, Edward H., 4,248,841, Cl. 423-210.000.

Reichardt, Manfred: *See*—
Wandel, Martin; Engelhard, Helmut; Gutschik, Ernst; Reichardt, Manfred; and Christoph, Geert, 4,248,934, Cl. 428-374.000.

Reichert, Gunter: *See*—
Niermann, Hermann; Reichert, Gunter; Ebert, Hans; and Neumann, Friedrich, 4,248,602, Cl. 23-293.00R.

Reilly Tar & Chemical Corp.: *See*—
Bailey, Thomas D., 4,249,009, Cl. 546-345.000.

Reinert, Gerhard, to Singer Company, The. Safety system to protect sewing machine needles. 4,248,167, Cl. 112-158.00R.

Reinhardt, Friedrich, to Hoechst Aktiengesellschaft. Process for obtaining fast colorations and prints on materials consisting of cellulosic fibers or of blends thereof with synthetic fibers. 4,248,593, Cl. 8-532.000.

Reliable Electric Company: *See*—
Baumbach, Bertram W., 4,249,224, Cl. 361-124.000.

Remie, Hans T.: *See*—
Graat, Johannes W.; and Remie, Hans T., 4,248,806, Cl. 261-118.000.

Renault, Christain L. A.: *See*—
Legrand, Jean-Jacques; and Renault, Christain L. A., 4,248,884, Cl. 424-274.000.

Rentsch, Ulrich W.: *See*—
Brcic, Ivo; Burda, Valentine; and Rentsch, Ulrich W., 4,249,129, Cl. 324-335.000.

Repik, Albert J., to Westvaco Corporation. Two stage fluid bed regeneration of spent carbon. 4,248,706, Cl. 210-673.000.

Resources Conservation Company: *See*—
Jezek, Louis J., 4,248,296, Cl. 165-118.000.

Respiratory Care, Inc.: *See*—
Brisson, A. Glen, 4,248,217, Cl. 128-204.170.

Reuel, Hermann: *See*—
Hedke, Manfred; Roos, Uve-Volker; and Reuel, Hermann, 4,248,583, Cl. 425-541.000.

Reuter, Rudolf, to Dual Gebruder Steidinger. Method for production of a turntable with stroboscope marks. 4,247,976, Cl. 29-527.400.

Rhinehart, Richard W.: *See*—
Jackson, Harold P.; and Rhinehart, Richard W., 4,248,034, Cl. 56-17.200.

Rhodes, Donald E.: *See*—
Knebel, Alfred H.; and Rhodes, Donald E., 4,248,692, Cl. 208-8.0LE.

Rhone-Poulenc Industries: *See*—
Fayolle, Bernard, 4,248,995, Cl. 528-171.000.
Kuntz, Emile, 4,248,802, Cl. 260-604.0HF.

Rhone-Poulenc Textile: *See*—
Bory, Alain; and Pommier, Jean, 4,248,577, Cl. 425-131.500.

Ribaudo, Roland G.: *See*—
Morgan, Albert W.; and Ribaudo, Roland G., 4,248,929, Cl. 428-288.000.
Ricciardelli, Robert H., to Biochem International Inc. Medical sensor assembly with battery. 4,248,239, Cl. 128-635.000.
Rich Products Corporation: *See*—
Eapen, Kuttikandathil E.; and Kahn, Marvin L., 4,248,902, Cl. 426-332.000.
Richardson, Neal A.: *See*—
Blumenthal, Jack L.; Burk, Maksymilian; and Richardson, Neal A., 4,248,627, Cl. 75-42.000.
Richardson, William C.: *See*—
Aberle, Gary F.; Balm, Gerald J.; Berstis, Viktors; Gregg, Leon E.; Hu, Kuang-Chi; Ranweiler, James G.; Richardson, William C.; Schardt, Terry L.; and Watson, Charles T., 4,249,241, Cl. 364-200.000.
Ricoh Company, Ltd.: *See*—
Fujimoto, Sakae, 4,248,417, Cl. 271-98.000.
Kanda, Hajime, 4,249,216, Cl. 358-257.000.
Riegger, Hubert: *See*—
Kolb, Bruno; Boege, Dietrich; Pospisil, Peter; and Riegger, Hubert, 4,248,355, Cl. 215-274.000.
Rijksuniversiteit te Groningen: *See*—
van Eykern, Leo A., 4,248,240, Cl. 128-671.000.
Riordan, Edward D.: *See*—
Mangan, John P.; and Riordan, Edward D., 4,249,068, Cl. 219-497.000.
Rissi, Erwin; and Ebnother, Anton, to Sandoz Ltd. Organic compounds. 4,248,877, Cl. 424-267.000.
Ritchie Industries, Inc.: *See*—
Peterson, Jerry D.; and Knief, Gerald L., 4,248,177, Cl. 119-73.000.
Ritter, Richard A.: *See*—
Devitt, Gerald J.; and Ritter, Richard A., 4,248.258, Cl. 137-124.000.
Robba, Max F.; and Aurousseau, Michel, to Innothera. Novel benzothienyl amino (propyl and butyl) ketones. 4,249,014, Cl. 549-49.000.
Robbi, Anthony D., to RCA Corporation. Digital drive circuit for electric motor or the like. 4,249,119, Cl. 318-341.000.
Robbins, Daniel H., to Itek Corporation. Two-part photosensitive media replaceable cassette supply device. 4,248,512, Cl. 354-275.000.
Robert Bosch GmbH: *See*—
Gorille, Ingo, 4,248,195, Cl. 123-416.000.
Watanabe, Risaburo; Ohtani, Masami; and Hashizume, Naoki, 4,248,575, Cl. 418-93.000.
Roberts, Michael C.: *See*—
Marzocchi, Alfred; Roberts, Michael C.; and Bolen, Charles E., 4,248,936, Cl. 428-391.000.
Roberts, Patrick S., to Whirlpool Corporation. Pulse generator for producing the harmonic equivalent of a sawtooth wave. 4,248,121, Cl. 84-1.190.
Robertshaw Controls Company: *See*—
Bauer, Werner R.; and Candor, James T., 4,248,058, Cl. 62-324.00A.
Bechtel, Jon H., 4,248,052, Cl. 62-140.000.
Sliger, Boyd P., 4,248,374, Cl. 236-34.500.
Robinson, Andrew: *See*—
Ellwood, Derek C.; Manchee, Richard J.; and Robinson, Andrew, 4,248,862, Cl. 424-92.000.
Robinson, Mark L., to Acro, Inc. String attaching to game racket handle. 4,247,975, Cl. 273-75.000.
Robinson, Michael B.: *See*—
Lacy, Lewis L.; Robinson, Michael B.; and Nisen, Daniel B., 4,248,083, Cl. 73-190.00R.
Rockwell International Corporation: *See*—
Brodbeck, Joseph F.; and Kazusky, Raymond, Jr., 4,248,115, Cl. 83-435.100.
Rodgers, John L.: *See*—
Scowen, Roger S.; and Rodgers, John L., 4,249,250, Cl. 365-230.000.
Roeder, George K. Packer nose assembly. 4,248,299, Cl. 166-153.000.
Roesch, Alfred: *See*—
Fichot, Julie Y.; and Roesch, Alfred, 4,249,034, Cl. 174-52.00H.
Roger, Bernard, to U.S. Philips Corporation. Mesa-type transistor and method of producing same. 4,249,195, Cl. 357-55.000.
Rogers, Gerald D., to Texas Instruments Incorporated. Integrated circuit MOS capacitor using implanted region to change threshold. 4,249,194, Cl. 357-51.000.
Rogers, Norman H.; and O'Hanlon, Peter J., to Beecham Group Limited. Antibacterial compounds, processes for their preparation and compositions containing them. 4,248,887, Cl. 424-283.000.
Rogers, Sandra K., to Champion International Corporation. Adjustable sun visor. 4,247,957, Cl. 2-12.000.
Rognmo, Tore: *See*—
Sjotun, Kyrre; and Rognmo, Tore, 4,248,153, Cl. 102-208.000.
Rohm and Haas Company: *See*—
Glavis, Frank J.; and Clemens, David H., 4,248,797, Cl. 564-288.000.
Roldness, David J.; Watson, Thomas H.; and Wonacott, Gary D., to Pullman Incorporated. Railway car counter balanced tilting deck. 4,248,557, Cl. 410-27.000.
Roll Form Corporation: *See*—
Tucker, Raymon Z., 4,248,109, Cl. 83-37.000.
Rollei of America, Inc.: *See*—
Dick, John D., 4,249,110, Cl. 315-241.00P.
Ogawa, Francis T., 4,249,109, Cl. 315-151.000.
Rolls-Royce Limited: *See*—
Harrison, John; Allsopp, Frederick; and Elliott, Geoffrey, 4,248,649, Cl. 156-174.000.
Wilde, Geoffrey L.; Taylor, Maurice I.; and Medland, Geoffrey P., 4,248,041, Cl. 60-226.00R.
Roman Machine Co.: *See*—
Martin, Merritt W., Jr., 4,248,582, Cl. 425-531.000.
Rombach, Friedrich B.: *See*—
Bader, Leonhard; Giessner, Frank; Pechinger, Ernst; Rombach, Friedrich B.; Ruprich, Wilhelm; Weber, Helmut; and Winter, Hermann, 4,248,823, Cl. 264-156.000.
Romero-Sierra, Cesar; and Webb, John C., to Queen's University at Kingston. Preservation of Douglas fir needles. 4,248,734, Cl. 252-400.00R.
Ronk Electrical Industries, Inc.: *See*—
Ronk, Leroy B.; and Hertz, Claude M., 4,249,237, Cl. 363-150.000.
Ronk, Leroy B.; and Hertz, Claude M., to Ronk Electrical Industries, Inc. Rotary phase converter. 4,249,237, Cl. 363-150.000.
Roob, Josef: *See*—
Blaschke, Kurt; and Roob, Josef, 4,248,550, Cl. 405-232.000.
Roof, Richard W., to Square D Company. Control system for multiple speed motor. 4,249,118, Cl. 318-305.000.
Roos, Uve-Volker: *See*—
Hedke, Manfred; Roos, Uve-Volker; and Reuel, Hermann, 4,248,583, Cl. 425-541.000.
Roose, Gerald L. Bale carrier and method for using same. 4,248,560, Cl. 414-24.500.
Root, Ernest F.: *See*—
McGown, James B.; and Root, Ernest F., 4,248,088, Cl. 73-319.000.
Ropke, Gunther: *See*—
Papst, Gero; Ropke, Gunther; and Topfer, Hans J., deceased, 4,248,623, Cl. 75-35.000.
Roschmann, Klaus: *See*—
Knothe, Herbert; Redlich, Horst; and Roschmann, Klaus, 4,248,438, Cl. 369-127.000.
Roscoe, Thomas T. Audio and visual intercommunication and surveillance system. 4,249,206, Cl. 358-86.000.
Rose, Esther E. Antichafe lower undergarment for women. 4,247,959, Cl. 2-212.000.
Rosen, Marvin; and Franklin, Lloyd C., to Glyco Chemicals, Inc. Process for the interconversion of crystalline forms of ethylene bis-stearamide. 4,248,792, Cl. 260-404.500.
Rosene, Ronald G.: *See*—
Wilson, Kenneth J.; and Rosene, Ronald G., 4,248,111, Cl. 83-140.000.
Rositch, Robert R.: *See*—
Hendrixon, John L.; and Rositch, Robert R., 4,247,972, Cl. 29-156.630.
Rotek Incorporated: *See*—
Sable, Harvey J., 4,248,488, Cl. 308-220.000.
Rothenberg, Edward M.: *See*—
Birks, Aleck M.; Haluk, Michael I.; and Rothenberg, Edward M., 4,248,576, Cl. 425-68.000.
Rousseau, Alain; and Ramel, Francois, to Effa Etudes. Thermostatically and hygrostatically controlled cabinet for storing foodstuffs and other particularly delicate products. 4,248,061, Cl. 62-419.000.
Rovin, Herman; Opuszenski, Theodore; and Pellicano, Joseph, to Automatech Industries, Inc. Panel folding machine and method. 4,248,414, Cl. 493-416.000.
Rowe, Herman D. Solar rock fireplace heating system. 4,248,204, Cl. 126-121.000.
Rowe, Lester A.: *See*—
Deckenback, Carl M.; Catrombon, George T.; and Rowe, Lester A., 4,248,559, Cl. 409-307.000.
Rowley, James R.: *See*—
Brown, William J.; and Rowley, James R., 4,248,472, Cl. 296-36.000.
Rowley, Robert J.: *See*—
Allen, David; and Rowley, Robert J., 4,248,467, Cl. 294-67.00R.
Rowsell, David G.; Spring, David J.; and Hems, Roger, to Wilkinson Sword Limited. Alicyclic amides having a physiological cooling effect. 4,248,859, Cl. 424-54.000.
Roy E. Roth Company: *See*—
Sieghartner, Leonard J., 4,248,571, Cl. 416-175.000.
Rubingh, Donn N.; and Stephens, Theodore C., to Procter & Gamble Company, The. Detergency booster. 4,248,729, Cl. 252-174.220.
Ruch, Anne-Marie P.: *See*—
Bourgery, Guy R.; Lacour, Alain P.; Moinet, Gerard H.; Pourrias, Bernard M.; and Ruch, Anne-Marie P., 4,248,788, Cl. 260-340.300.
Rudolph, Hans: *See*—
de Cleur, Eckhard; Dhein, Rolf; Rudolph, Hans; Kreuder, Hans J.; Muller, Hanns P.; Schafer, Walter; Wagner, Kuno; and Findeisen, Kurt, 4,248,978, Cl. 525-124.000.
Rudolph, Herman: *See*—
Carrington, John H.; and Rudolph, Herman, 4,248,543, Cl. 401-183.000.
Rupley, Orrin J. Quick-detachable antenna mount. 4,249,182, Cl. 343-715.000.
Ruprich, Wilhelm: *See*—
Bader, Leonhard; Giessner, Frank; Pechinger, Ernst; Rombach, Friedrich B.; Ruprich, Wilhelm; Weber, Helmut; and Winter, Hermann, 4,248,823, Cl. 264-156.000.
Russel, Ocrel M.: *See*—
Christensen, Lyle S.; and Russel, Ocrel M., 4,248,897, Cl. 426-36.000.

Russell, Gordon A.: *See*—
Bleiman, Arnold M.; and Russell, Gordon A., 4,248,661, Cl. 156-584.000.

Russo, John F. Automobile body clamp. 4,248,078, Cl. 72-457.000.

Ryan, John O.: *See*—
Perry, Vinson R.; and Ryan, John O., 4,249,202, Cl. 358-36.000.

Rye, Grover W.: *See*—
Curtiss, Walter W., Jr.; and Rye, Grover W., 4,248,286, Cl. 152-158.000.

S.C.I. Le Brin: *See*—
Zizine, Jean L., 4,248,086, Cl. 73-861.090.

Saar, David A.: *See*—
Leukhardt, Jill L.; and Saar, David A., 4,249,117, Cl. 318-275.000.

Sable, Harvey J., to Rotek Incorporated. Quick disconnect bearing mount for construction machinery. 4,248,488, Cl. 308-220.000.

Sahay, Ravi B., to Xerox Corporation. Copier with document sensing control. 4,248,528, Cl. 355-14.00R.

Saika, Daini: *See*—
Tomidokoro, Susumu; Sato, Michito; and Saika, Daini, 4,248,801, Cl. 564-463.000.

Saino, Mitsuo: *See*—
Tamura, Sakae; Okabe, Kyoji; Fukutake, Tsuyoshi; Taguchi, Seiji; Nagai, Tamotsu; Saino, Mitsuo; and Iwamura, Tadaaki, 4,248,625, Cl. 75-41.000.

St. Clair, David J., to Shell Oil Company. Construction adhesive. 4,248,759, Cl. 260-33.60A.

Saito, Kunio: *See*—
Chono, Masazumi; Maeda, Kunio; and Saito, Kunio, 4,249,004, Cl. 544-192.000.

Saito, Shunjiro; Ishibashi, Saburo; and Shimojo, Nobuei, to TDK Electronics Company, Limited. Process for preparing insoluble electrode. 4,248,906, Cl. 427-125.000.

Saito, Takeshi: *See*—
Tajima, Eiichi; Yamamoto, Kaname; and Saito, Takeshi, 4,248,926, Cl. 428-253.000.

Sakai, Kazuhiko: *See*—
Negi, Youji; Iwata, Kouji; and Sakai, Kazuhiko, 4,248,991, Cl. 526-331.000.

Sakai, Toshihiko; Kobayashi, Sumio; and Suzuki, Takao, to Sumitomo Metal Industries Limited. Method and apparatus for detecting damage of blast furnace inside wall repairing materials. 4,248,809, Cl. 264-30.000.

Sakamoto, Nozomu, to Alps Electric Co., Ltd. Variable impedance device. 4,249,157, Cl. 338-176.000.

Sakaue, Tatsuo; Suzuki, Yasoji; and Iida, Tetsuya, to Tokyo Shibaura Denki Kabushiki Kaisha. Input-weighted charge transfer transversal filter. 4,249,145, Cl. 333-165.000.

Sakharnov, Vasily A.: *See*—
Paton, Boris E.; Lebedev, Vladimir K.; Kuchuk-Yatsenko, Sergei I.; Sakharnov, Vasily A.; Galyan, Boris A.; Dobrovolsky, Stanislav D.; and Sidorenko, Mikhail N., 4,249,153, Cl. 336-82.000.

Sakuma, Katsumi: *See*—
Wakabayashi, Akira; Watanabe, Shoichi; Sato, Koji; Kohama, Hiroyuki; and Sakuma, Katsumi, 4,248,612, Cl. 55-350.000.

Salazar, Maria V. Chest exerciser. 4,248,421, Cl. 272-130.000.

Salman, Syed, to International Telephone & Telegraph Corporation. Dimensionally stable structural foam plastic product. 4,248,931, Cl. 428-315.000.

Salva, Juan M.: *See*—
Coupland, Keith; Smith, Clinton R.; and Salva, Juan M., 4,248,720, Cl. 252-42.700.

Salvans, Juan; Del Cueto, Carlos; and Del Cueto, Fernando L. Method and apparatus for coloring tow and colored tow produced therefrom. 4,248,592, Cl. 8-485.000.

Samour, Carlos M.; and Vida, Julius A., to Bristol-Myers Company. Alkoxymethyl and benzyloxymethyl phenobarbital compounds. 4,249,005, Cl. 544-302.000.

Sander, Jurgen; Skaletz, Detlef; Buhr, Gerhard; and Lohaus, Gerhard, to Hoechst Aktiengesellschaft. Acid degradable radiation-sensitive mixture. 4,248,957, Cl. 430-270.000.

Sanders, David C., to Great Lakes Chemical Corp. In situ conductimetric end point determination of the oxyethylation of phenolic compounds. 4,249,024, Cl. 568-608.000.

Sandmeier, Rudolf: *See*—
Seckinger, Karl; and Sandmeier, Rudolf, 4,248,621, Cl. 71-120.000.

Sandoz, Inc.: *See*—
Kathawala, Faizulla G.; and Heider, John G., 4,248,893, Cl. 424-324.000.

Sandoz Ltd.: *See*—
Rissi, Erwin; and Ebnother, Anton, 4,248,877, Cl. 424-267.000.
Seckinger, Karl; and Sandmeier, Rudolf, 4,248,621, Cl. 71-120.000.
Stadler, Paul, 4,248,871, Cl. 421-250.000.
Wenger, Roland, 4,249,001, Cl. 542-404.000.

Sankyo Company Limited: *See*—
Baba, Tsuneo; Kaneko, Masakatsu; Shimizu, Bunji; and Arakawa, Masao, 4,248,999, Cl. 536-4.000.
Oka, Hidehiko; Terahara, Akira; and Endo, Akira, 4,248,889, Cl. 424-308.000.

Sano, Shoichi; and Furuya, Kunitaka, to Honda Giken Kogyo Kabushiki Kaisha. Suspension spring device for a motor vehicle. 4,248,410, Cl. 267-60.000.

Santoro, Giovanni, to Werbetronic AG. Drive units provided with driving rollers. 4,248,101, Cl. 74-10.00R.

Sanyo Chemical Industries, Ltd.: *See*—
Uchinuma, Kazuo; and Sasaki, Umekichi, 4,248,726, Cl. 252-52.00A.

Sanzenbacher, Charles W.: *See*—
Scarlett, John C.; and Sanzenbacher, Charles W., 4,248,626, Cl. 75-38.000.

Sanzi, James L.: *See*—
Ernst, Donald M.; and Sanzi, James L., 4,248,295, Cl. 165-105.000.

Sarges, Reinhard; and Schnur, Rodney C., to Pfizer Inc. Treating diabetes-associated complications with hydantoin amines. 4,248,882, Cl. 424-273.00R.

Sarkary, Homi G.: *See*—
Gartner, Helmut M.; Petvai, Steve I.; Sarkary, Homi G.; and Schnitzel, Randolph H., 4,248,688, Cl. 204-192.00E.

Sasaki, Ryusei; Mori, Yasuki; and Morishita, Hirosada, to Hitachi, Ltd. Ink for ink-jet printer containing dichloromethane as an organic solvent and a basic dye as a coloring agent. 4,248,636, Cl. 106-23.000.

Sasaki, Shosaku: *See*—
Murakami, Ichiro; Sasaki, Shosaku; and Tanimura, Masamitsu, 4,248,750, Cl. 260-29.1SB.

Sasaki, Umekichi: *See*—
Uchinuma, Kazuo; and Sasaki, Umekichi, 4,248,726, Cl. 252-52.00A.

Saseb Aktiengesellschaft: *See*—
Mohnhaupt, Dietrich F. A., 4,249,161, Cl. 340-52.00D.

Sashihara, Thomas F.: *See*—
Pieski, Edwin T.; and Sashihara, Thomas F., 4,248,990, Cl. 526-317.000.

Sato, Koji: *See*—
Wakabayashi, Akira; Watanabe, Shoichi; Sato, Koji; Kohama, Hiroyuki; and Sakuma, Katsumi, 4,248,612, Cl. 55-350.000.

Sato, Michito: *See*—
Tomidokoro, Susumu; Sato, Michito; and Saika, Daini, 4,248,801, Cl. 564-463.000.

Sato, Tadashi; and Furuichi, Katsushi, to Canon Kabushiki Kaisha. Automatic image original handling device. 4,248,529, Cl. 355-41.000.

Sato, Yoshito: *See*—
Uehara, Kazuo; Tohma, Hideaki; and Sato, Yoshito, 4,248,573, Cl. 417-216.000.
Uehara, Kazuo; Tohma, Hideaki; and Sato, Yoshito, 4,248,574, Cl. 417-216.000.

Sato, Zenichi; Tabuchi, Fumiya; Takagi, Keiichiro; and Imamiya, Yoji, to Ihara Chemical Industry Company, Limited. Process for producing thiolcarbamates. 4,248,779, Cl. 260-239.0BF.

Satoh, Yoshiaki: *See*—
Watanabe, Ichiro; Satoh, Yoshiaki; and Takano, Takayuki, 4,248,968, Cl. 435-129.000.

Satou, Masanori, to Showa Machine Industries Co., Ltd. Drill assembly. 4,248,555, Cl. 408-225.000.

Satterly, Kenneth P., to Witco Chemical Corporation. Rigid shrink stable polyurethane foam derived from an adduct of an alkylene oxide having at least three carbon atoms and a polyol having at least four hydroxy groups and blown with a fluorinated-chlorinated alkane. 4,248,975, Cl. 521-110.000.

Saunders, Percy L. Variable draft provider for fireplace. 4,248,205, Cl. 126-143.000.

Savage, Jack W.; and Carpenter, Keith H., to General Motors Corporation. Washer system for transparent surfaces on a vehicle. 4,248,383, Cl. 239-284.00A.

Sawayama, Tadahiro; Kinugasa, Hiroaki; Nishimura, Haruki; Takeyama, Kunihiko; and Hosoki, Kanoo, to Dainippon Pharmaceutical Co., Ltd. 1-(3-Mercapto-2-methylpropanoyl)prolyl amino acid derivatives and salts thereof, processes for their preparation, and pharmaceutical compositions containing such compounds. 4,248,883, Cl. 424-274.000.

Sawayama, Takehiro; Ito, Ichizo; Aga, Toshio; and Ando, Tetsuo, to Yokogawa Electric Works, Ltd. Flow metering apparatus. 4,248,098, Cl. 73-861.240.

Sayre, David T.: *See*—
Chapman, Dennis C.; and Sayre, David T., 4,248,566, Cl. 415-26.000.

Scaffolding Components Limited: *See*—
McKane, John, 4,248,544, Cl. 403-49.000.

Scarbrough, William L.; Norris, Jerry L.; and Hardin, Joe D. Aquifer recharge using natural energy. 4,248,305, Cl. 166-305.00D.

Scarlett, John C.; and Sanzenbacher, Charles W., to Midrex Corporation. Method for producing molten iron from iron oxide with coal and oxygen. 4,248,626, Cl. 75-38.000.

Scartazzini, Riccardo; and Bickel, Hans, to Ciba-Geigy Corporation. Cephem carbonylmethyl derivatives. 4,248,868, Cl. 424-246.000.

Schaefer, Alan W. Device and method for protecting baled hay from moisture. 4,248,343, Cl. 206-83.500.

Schafer, Douglas R.: *See*—
Livers, Gerald D.; Schafer, Douglas R.; and Thiele, Walter E., 4,249,046, Cl. 200-61.45R.

Schafer, Karl, to Bayer Aktiengesellschaft. Process for the feltproof finishing of textiles made of keratin-containing fibers. 4,248,596, Cl. 8-127.600.

Schafer, Walter: *See*—
de Cleur, Eckhard; Dhein, Rolf; Rudolph, Hans; Kreuder, Hans J.; Muller, Hanns P.; Schafer, Walter; Wagner, Kuno; and Findeisen, Kurt, 4,248,978, Cl. 525-124.000.

Schardt, Terry L.: *See*—
Aberle, Gary F.; Balm, Gerald J.; Berstis, Viktors; Gregg, Leon E.; Hu, Kuang-Chi; Ranweiler, James G.; Richardson, William C.;

Schardt, Terry L.; and Watson, Charles T., 4,249,241, Cl. 364-200.000.
Schechter, Michael M.: *See*—
Choma, Michael A.; Simko, Aladar O.; Schechter, Michael M.; and Wade, Wallace R., 4,248,193, Cl. 123-341.000.
Schenectady Chemicals, Inc.: *See*—
Laganis, Deno, 4,248,745, Cl. 260-22.00D.
Scherer, George W., to Corning Glass Works. Method for drawing high-bandwidth optical waveguides. 4,248,614, Cl. 65-3.00A.
Schering Aktiengesellschaft: *See*—
Ehrich, Hans J.; Clauss, Wolfgang; and Mahlkow, Hartmut, 4,248,632, Cl. 106-1.110.
Schick Laboratories, Inc.: *See*—
Sears, Hartley M., 4,248,067, Cl. 70-58.000.
Schicketanz, Rudolf: *See*—
Stuiber, Walter; Gluck, Otto; and Schicketanz, Rudolf, 4,248,542, Cl. 400-298.000.
Schiefer, Harry M.: *See*—
Coon, Delbert L.; and Schiefer, Harry M., 4,248,825, Cl. 264-213.000.
Schiegel, Eberhard; and Krugel, Manfred, to Georg Schlegel, Firma. Control-key switch. 4,249,057, Cl. 200-296.000.
Schloemann-Siemag, Inc.: *See*—
Fuhrmann, Wilhelm; and Sofranko, Andrew J., 4,248,074, Cl. 72-247.000.
Schmid, Hans-Dieter: *See*—
Bhongbhibhat, Wisnu; Boehringer, Andreas; Schmid, Hans-Dieter; Haussmann, Siegfried; and Ilic, Ivan, 4,249,099, Cl. 310-218.000.
Schmidt, Andreas, to Ciba-Geigy Corporation. Acetal derivatives as extreme pressure additives for lubricants. 4,248,723, Cl. 252-48.600.
Schmidt, Franz: *See*—
Sterzel, Hans-Josef; Schmidt, Franz; and Pirzer, Hans, 4,248,996, Cl. 528-272.000.
Schmidt, Gunter: *See*—
Koerner, Gotz; Schmidt, Gunter; and Nickel, Friedhelm, 4,248,590, Cl. 8-128.00A.
Schmidt, Hans-Jurgen: *See*—
Schminke, Heinz; Krebs, Rudolf; Wendel, Gunter; Schmidt, Hans-Jurgen; Desch, Willy; and Nitz, Jurgen, 4,248,610, Cl. 55-101.000.
Schmidt, Manfred: *See*—
Krobel, Heinz; Bauer, Walter; and Schmidt, Manfred, 4,248,172, Cl. 116-200.000.
Schmidt, Theo, to Lever Brothers Company. Process and apparatus for producing a moisture-permeable film. 4,248,822, Cl. 264-154.000.
Schminke, Heinz; Krebs, Rudolf; Wendel, Gunter; Schmidt, Hans-Jurgen; Desch, Willy; and Nitz, Jurgen, to Metallgesellschaft Aktiengesellschaft. Dust collector with pressure-relief opening. 4,248,610, Cl. 55-101.000.
Schmitt, Frederick L.: *See*—
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,248,250, Cl. 131-17.00R.
Schmitz, Gunter: *See*—
Langlitz, Karlheinz; and Schmitz, Gunter, 4,248,409, Cl. 266-268.000.
Schnitzel, Randolph H.: *See*—
Gartner, Helmut M.; Petvai, Steve I.; Sarkary, Homi G.; and Schnitzel, Randolph H., 4,248,688, Cl. 204-192.00E.
Schnur, Rodney C.: *See*—
Sarges, Reinhard; and Schnur, Rodney C., 4,248,882, Cl. 424-273.00R.
Schofield, John A.; and Hawes, John E., to Shell Oil Company. Preparation of organic acids and/or esters. 4,249,015, Cl. 560-1.000.
Scholl, Walter; and Nickel, Horst, to Bayer Aktiengesellschaft. Metal complex reactive dyestuffs. 4,248,771, Cl. 260-146.00T.
Schrenk, Heinrich M.: *See*—
Bharucha, Kekhusroo R.; Schrenk, Heinrich M.; and Slemon, Clarke E., 4,248,780, Cl. 260-239.100.
Schroeck, Calvin W.: *See*—
Clason, Donald L.; and Schroeck, Calvin W., 4,248,722, Cl. 252-46.700.
Schroeder, Rolf: *See*—
Stemme, Otto; Lermann, Peter; Schroeder, Rolf; and Karl, Horst, 4,248,511, Cl. 354-173.000.
Schroter, Friedrich, to WUPA Maschinenfabrik GmbH. Equipment for breaking the scrap or useful parts away from stamped workpieces from flat material. 4,248,370, Cl. 225-97.000.
Schuck, Ludwig; and Benz, Hermann, to Carl Schenck AG. Roller conveyor and its track. 4,248,341, Cl. 198-790.000.
Schultz, Richard M., to Honeywell Inc. Line supervision. 4,249,166, Cl. 340-506.000.
Schulz, Egon; and Dolega, Ulrich, to ITT Industries, Inc. Monolithic integrated semiconductor diode arrangement. 4,249,192, Cl. 357-38.000.
Schutt, Steven R. Skin treatment methods. 4,248,861, Cl. 424-60.000.
Scifres, Donald R.: *See*—
Burnham, Robert D.; and Scifres, Donald R., 4,249,142, Cl. 331-94.50H.
Scintrex Limited: *See*—
Brcic, Ivo; Burda, Valentine; and Rentsch, Ulrich W., 4,249,129, Cl. 324-335.000.
SCM Corporation: *See*—
Bledsoe, James O., Jr.; and Cardenas, Carlos G., 4,249,028, Cl. 585-273.000.
Scott, Leonard F.: *See*—
McCloskey, Chester M.; Fischer, James R.; and Scott, Leonard F., 4,248,785, Cl. 260-326.50A.
Scotti, Alessandro: *See*—
Gentili, Claudio; Mantellina, Calogero; and Scotti, Alessandro, 4,249,253, Cl. 371-38.000.
Scowen, Roger S.; and Rodgers, John L., to National Research Development Corporation. Computer storage arrangements with overwrite warning. 4,249,250, Cl. 365-230.000.
Scull, William L., to Leslie, Co. Plug assembly for movable plug valves. 4,248,403, Cl. 251-85.000.
Seal Lock International, Inc.: *See*—
Diperstein, David, 4,247,973, Cl. 29-402.110.
Sealed Power Corporation: *See*—
Hendrixon, John L.; and Rositch, Robert R., 4,247,972, Cl. 29-156.630.
Sears, Hartley M., to Schick Laboratories, Inc. Device lock allowing rotation. 4,248,067, Cl. 70-58.000.
Seckinger, Karl; and Sandmeier, Rudolf, to Sandoz Ltd. 1-Methyl-3-formyl-3-substituted ureas. 4,248,621, Cl. 71-120.000.
Seeley, Douglas: *See*—
Jeffers, William; Seeley, Douglas; Faust, Raimund J.; and Liu, Shuchen, 4,248,959, Cl. 430-300.000.
Seib, Martin R. P., to Martin Seib Limited. Sheet feed equipment. 4,248,416, Cl. 271-10.000.
Seiden, Myron A.: *See*—
Baker, Philip G.; Bing, Herbert A.; and Seiden, Myron A., 4,248,510, Cl. 354-109.000.
Seino, Takashi: *See*—
Fujii, Shin; Ohkawa, Koue; and Seino, Takashi, 4,248,974, Cl. 521-91.000.
Seiren Denshi Kabushiki Kaisha: *See*—
Shimada, Ryoichi, 4,248,533, Cl. 356-238.000.
Sekiguchi, Nobuo: *See*—
Kato, Yasuhiro; Sekiguchi, Nobuo; and Yosida, Sizuo, 4,249,227, Cl. 361-334.000.
Sekiguchi, Shizuo; Nagano, Katsumasa; Miyawaki, Yozo; and Kitano, Kyozo, to Lion Fat & Oil Co., Ltd., The. Process for the production of internal olefin sulfonate. 4,248,793, Cl. 260-513.00T.
Seng, Stephen; Henry, Richard K.; Propster, Mark A.; and Hohman, Charles M., to Owens-Corning Fiberglas Corporation. Pollution abating, energy conserving glass manufacturing process. 4,248,615, Cl. 65-27.000.
Seng, Stephen; Henry, Richard K.; Propster, Mark A.; and Hohman, Charles M., to Owens-Corning Fiberglas Corporation. Pollution abating, energy conserving glass manufacturing apparatus. 4,248,616, Cl. 65-335.000.
Serban, Alexander; Warner, Richard B.; and Watson, Keith G., to ICI Australia Limited. Derivatives of (pyrimidyloxy)phenoxy-alkanecarboxylic acid and herbicidal compositions thereof. 4,248,618, Cl. 71-92.000.
Serban, Alexander; Watson, Keith G.; and Warner, Richard B., to ICI Australia Limited. Bis[pyrimidyloxy(thio)]benzene derivatives. 4,248,619, Cl. 71-92.000.
Shakespeare Company: *See*—
McLain, Philippe H.; Shrontz, Robert J.; and Tringali, Dominick, 4,248,062, Cl. 64-1.00S.
Shanks, W., Jr.: *See*—
Womack, Robert R., 4,248,211, Cl. 126-446.000.
Sharp Kabushiki Kaisha: *See*—
Komaki, Shigeki, 4,249,054, Cl. 200-159.00B.
Nakanishi, Akira; and Miyakoshi, Kazumitsu, 4,249,245, Cl. 364-710.000.
Sharp, Shelby P.; and Yarborough, Lyman, to Standard Oil Company (Indiana). Method for removing elemental sulfur from high temperature, high pressure wells and flow lines. 4,248,717, Cl. 252-8.55B.
Shaw, Don W., to United States of America, Navy. Localized anodic thinning. 4,248,683, Cl. 204-129.300.
Shell Oil Company: *See*—
Drent, Eit; and van der Werf, Ringnerus P., 4,249,031, Cl. 585-733.000.
Mommessin, Pierre R.; Castano, John R.; Rankin, John G.; and Weiss, Mary L., 4,248,599, Cl. 23-230.0HC.
St. Clair, David J., 4,248,759, Cl. 260-33.60A.
Schofield, John A.; and Hawes, John E., 4,249,015, Cl. 560-1.000.
Shenk, Jay D.: *See*—
Herron, Vincent P.; and Shenk, Jay D., 4,248,647, Cl. 156-84.000.
Sheridan, James C. Process for forming simulated marble and resulting product. 4,248,816, Cl. 264-73.000.
Shields, Santos: *See*—
White, James E.; and Shields, Santos, 4,248,485, Cl. 308-8.200.
Shimada, Ryoichi, to Seiren Denshi Kabushiki Kaisha. Distorted texture detecting method. 4,248,533, Cl. 356-238.000.
Shimamura, Juki, to Asahi Communications, Incorporated. Self-operative steering for radio-controlled model car. 4,248,011, Cl. 46-254.000.
Shimazu, Teruo; and Maejima, Yoshihiko, to Mitsumi Electric Co. Ltd. Push button type tuner apparatus. 4,248,102, Cl. 74-10.330.
Shimizu, Bunji: *See*—
Baba, Tsuneo; Kaneko, Masakatsu; Shimizu, Bunji; and Arakawa, Masao, 4,248,999, Cl. 536-4.000.
Shimizu, Mikio: *See*—
Ito, Yutaka; Inaba, Masao; Mizukami, Mineo; and Shimizu, Mikio, 4,249,198, Cl. 358-13.000.

Shimizu, Shigemitsu: *See*—
Doi, Yasuhiko; Shimizu, Shigemitsu; Matsui, Toshio; Kawai, Yoshihisa; Irie, Yutaka; Suzuki, Norihiko; and Iwao, Soichi, 4,248,523, Cl. 355-13.000.

Shimojo, Nobuei: *See*—
Saito, Shunjiro; Ishibashi, Saburo; and Shimojo, Nobuei, 4,248,906, Cl. 427-125.000.

Shin-Etsu Chemical Co. Ltd.: *See*—
Takago, Toshio, 4,248,992, Cl. 528-28.000.
Takago, Toshio, 4,248,993, Cl. 528-38.000.

Shin Meiwa Industry Co., Ltd.: *See*—
Hozumi, Keiichi; Nishikaichi, Yuji; Ueda, Masao; Miura, Tatsuya; and Yamamoto, Hirotoshi, 4,249,062, Cl. 219-124.340.

Shinkai, Hiroyuki: *See*—
Mochida, Ei; Ogawa, Nobuhisa; Shinkai, Hiroyuki; and Hashimoto, Masakatsu, 4,248,965, Cl. 435-7.000.

Shinkawa, Keiro; and Sodeyama, Chuichi, to Hitachi, Ltd. Mixer circuit. 4,249,263, Cl. 455-327.000.

Shinko Electric Co., Ltd.: *See*—
Kawano, Hitoshi; Ikemura, Kiyoshi; and Hayashi, Mitsuhiro, 4,249,063, Cl. 219-130.510.

Shinoda, Tsutae; Yoshikawa, Kazuo; and Andoh, Shizuo, to Fujitsu Limited. Self shift type gas discharge panel. 4,249,104, Cl. 313-188.000.

Shionogi & Co., Ltd.: *See*—
Igarashi, Kikuo; and Honma, Tsunetoshi, 4,248,865, Cl. 424-180.000.
Ogata, Masaru; Watanabe, Yoshihachi; Matsumoto, Hiroshi; and Tawara, Katsuya, 4,248,869, Cl. 424-248.500.

Shishido, Toetsu: *See*—
Yajima, Seishi; Okamura, Kiyohito; and Shishido, Toetsu, 4,248,814, Cl. 264-63.000.

Shofner, Frederick M.; Miller, Arthur C., Jr.; and Kreikebaum, Gerhard, to PPM, Inc. Electro-optical system and method and apparatus for providing automatically-compensating, traceable calibration and zeroing for light scattering devices. 4,249,244, Cl. 364-525.000.

Shortway, Harry A.; Graham, Alan A.; and Miller, Charles H., to Congoleum Corporation. Resinous polymer sheet materials having selective, surface decorative effects and methods of making the same. 4,248,922, Cl. 428-159.000.

Showa Machine Industries Co., Ltd.: *See*—
Satou, Masanori, 4,248,555, Cl. 408-225.000.

Showa Musen Kogyo Kabushiki Kaisha: *See*—
Mochizuki, Asaji, 4,249,086, Cl. 307-10.00R.

Shrontz, Robert J.: *See*—
McLain, Philippe H.; Shrontz, Robert J.; and Tringali, Dominick, 4,248,062, Cl. 64-1.00S.

Shuey, Kenneth C.; Baker, Donal E.; and Doughman, Charles L., to Westinghouse Electric Corp. High voltage DC contactor with solid state arc quenching. 4,249,223, Cl. 361-4.000.

Shultz, David E.: *See*—
Wilson, Harry L.; and Shultz, David E., 4,248,188, Cl. 123-382.000.

Shunichi, Abe; and Akiyama, Mistuo, to Konishiroku Photo Industry Co., Ltd. Circuit for detecting door state in copying apparatus. 4,248,526, Cl. 355-14.00R.

Sick, Erwin, to Erwin Sick GmbH Optik-Elektronik. Optical apparatus for determining the light exit angle from a material strip illuminated by a light bead. 4,248,537, Cl. 356-431.000.

Sidorenko, Mikhail N.: *See*—
Paton, Boris E.; Lebedev, Vladimir K.; Kuchuk-Yatsenko, Sergei I.; Sakharnov, Vasily A.; Galyan, Boris A.; Dobrovolsky, Stanislav D.; and Sidorenko, Mikhail N., 4,249,153, Cl. 336-82.000.

SIE Incorporated: *See*—
Brown, Lee R.; Herrera, Jose L.; and Plumadore, John D., 4,248,521, Cl. 355-3.00R.

Siegell, Jeffrey H.: *See*—
Coulaloglou, Costas A.; and Siegell, Jeffrey H., 4,247,987, Cl. 34-1.000.

Sieghartner, Leonard J., to Roy E. Roth Company. Centrifugal impellers. 4,248,571, Cl. 416-175.000.

Siemens Aktiengesellschaft: *See*—
Bachner, Alfred; and Vogl, Herbert, 4,248,319, Cl. 178-3.000.
Bechteler, Martin; and Krueger, Hans, 4,248,502, Cl. 350-341.000.
Fenk, Josef, 4,249,262, Cl. 455-333.000.
Immler, Josef, 4,249,235, Cl. 363-2.000.
Kolacny, Peter, 4,249,179, Cl. 343-7.00A.
Lange, Gottfried; and Heinrich, Hans, 4,249,078, Cl. 250-315.200.
Liertz, Heinrich; Kunze, Dieter; and Parstorfer, Richard, 4,248,499, Cl. 350-96.210.

Siemens Corporation: *See*—
Hunt, Thomas J., Jr., 4,248,396, Cl. 246-247.000.

Silberman, Raphael J.; Tilton, Frederick T.; Smith, Everett H.; and Wichkoski, Dennis A., to Baker International Corporation. Latch assembly and method. 4,248,307, Cl. 166-315.000.

Silver, Jules. Disposable enema syringe for one hand use. 4,248,228, Cl. 128-234.000.

Simeon, Omer T.: *See*—
McArdle, Christopher J.; and Simeon, Omer T., 4,247,984, Cl. 30-296.00R.

Simeonov, Yordan T.; Cheshkov, Valeri M.; and Zahariev, Georgi Z., to Centralna Laboratoria Po Physiko-Chimicheska Mechanika pri Ban. Method of obtaining composite materials and products, particularly for construction and building purposes, based on urea-formaldehyde resins by addition of phosphogypsum. 4,248,760, Cl. 260-39.0SB.

Simjian, Luther G. Metering system. 4,249,071, Cl. 235-375.000.

Simko, Aladar O.: *See*—
Choma, Michael A.; Simko, Aladar O.; Schechter, Michael M.; and Wade, Wallace R., 4,248,193, Cl. 123-341.000.

Simpson, George R., to Bos-Knox, Ltd. Light control device. 4,248,501, Cl. 350-266.000.

Sims, Anson: *See*—
Jones, Lawrence T.; Sims, Anson; Howden, Ashley G.; and Lee, Robert S., 4,248,006, Cl. 46-17.000.

Sims, Larry A.; Lambert, Gerard L.; Gross, Raymond J.; and Collins, Harold B., to Mattel Inc. Spinning top pinball-type game. 4,248,426, Cl. 273-108.000.

Singer Company, The: *See*—
Elbert, Hubert F., 4,248,534, Cl. 356-350.000.
Giaimo, Anthony; MacInnes, John R.; and Larsen, Robert H., 4,248,169, Cl. 112-255.000.
Hoffman, Jay, 4,248,168, Cl. 112-158.00E.
Ostrowski, E. A., 4,248,270, Cl. 138-45.000.
Reinert, Gerhard, 4,248,167, Cl. 112-158.00R.

Singer, Malcolm S., to Chevron Research Company. Fungicidal and herbicidal 5-haloaminoalkylimino-1,3-imidazolidine-2,4-diones. 4,248,620, Cl. 71-92.000.

Sinnreich, Joel: *See*—
Batzer, Hans; and Sinnreich, Joel, 4,249,000, Cl. 536-66.000.

Sipli, Wolfgang: *See*—
von Zeppelin, Dieter; and Sipli, Wolfgang, 4,248,233, Cl. 128-323.000.

Sirchie Finger Print Laboratories, Inc.: *See*—
Carrington, John H.; and Rudolph, Herman, 4,248,543, Cl. 401-183.000.

Sisk, Francis J., to Westinghouse Electric Corp. Dual capacity compressor with reversible motor and controls arrangement therefor. 4,248,053, Cl. 62-158.000.

Sjotun, Kyrre; and Rognmo, Tore, to A/S Kongsberg Vapenfabrikk. Combination fuze for missiles. 4,248,153, Cl. 102-208.000.

Skaletz, Detlef: *See*—
Sander, Jurgen; Skaletz, Detlef; Buhr, Gerhard; and Lohaus, Gerhard, 4,248,957, Cl. 430-270.000.

Skaria, Arankathu; and Stark, Reiner, to Swiss Aluminium Ltd. Process for the continuous dehydration and calcination of hydrated aluminum fluoride for the manufacture of high purity aluminum fluoride. 4,248,849, Cl. 423-489.000.

Skeist, S. Merrill, to Spellman High Voltage Electronics Corporation. Table with electrostatic air purifier/cleaner. 4,248,162, Cl. 108-50.000.

SKF Nova AB: *See*—
Asberg, Sture L., 4,248,487, Cl. 308-189.00R.

Skillen, Richard P.; and King, Frederick D., to Northern Telecom Limited. Apparatus and method used in the assembly of fibre optic cables. 4,248,035, Cl. 57-6.000.

Slemon, Clarke E.: *See*—
Bharucha, Kekhusroo R.; Schrenk, Heinrich M.; and Slemon, Clarke E., 4,248,780, Cl. 260-239.100.

SLI Industries, Inc.: *See*—
Cox, Robert M.; Kilmer, Dan L.; and Kolkowski, Adam, 4,249,221, Cl. 360-97.000.

Sliger, Boyd P., to Robertshaw Controls Company. Engine cooling system thermostat and method of making the same. 4,248,374, Cl. 236-34.500.

Smilanich, Nicholas J., to Union Carbide Corporation. Seals for electrochemical cells. 4,248,944, Cl. 429-185.000.

Smith, Charles W., Jr.; and Zimmerman, Franz X., to Autoclave Engineers, Inc. Multizone graphite heating element furnace. 4,249,032, Cl. 13-25.000.

Smith, Chester A., to General Electric Company. Methods of making slot liners and stator assemblies including same. 4,247,978, Cl. 29-596.000.

Smith, Clinton R.: *See*—
Coupland, Keith; Smith, Clinton R.; and Salva, Juan M., 4,248,720, Cl. 252-42.700.

Smith, David S., to Eastman Kodak Company. Videodisc replication apparatus. 4,248,531, Cl. 355-91.000.

Smith, E. Quimby, Jr., to Q Corporation. Engine operated by a non-polluting recyclable fuel. 4,248,048, Cl. 60-645.000.

Smith, Everett H.: *See*—
Silberman, Raphael J.; Tilton, Frederick T.; Smith, Everett H.; and Wichkoski, Dennis A., 4,248,307, Cl. 166-315.000.

Smith, Harold E.: *See*—
Dunn, Neil C.; Francis, Robert L.; and Smith, Harold E., 4,248,249, Cl. 130-27.00T.

Smith, Harry: *See*—
Buckle, Derek R.; and Smith, Harry, 4,248,879, Cl. 424-269.000.

Smith, Herman W., to Upjohn Company, The. ω-Aryl-13,14-didehydro-PGE compounds. 4,249,016, Cl. 560-53.000.

Smith International, Inc.: *See*—
Newcomb, Alan L., 4,248,484, Cl. 308-8.200.

Smith, Jack E., Jr.; and Mason, Paul C., to Lanier Business Products, Inc. Dictation-transcription system. 4,249,041, Cl. 369-28.000.

Smith, Richard R.: *See*—
Lal, Joginder; and Smith, Richard R., 4,248,986, Cl. 525-359.000.

Smith, Verity C., to Vaponics Inc. Distillation apparatus. 4,248,672, Cl. 203-11.000.

Smiths Industries Limited: *See*—
Taylor, Joseph P., 4,248,235, Cl. 128-349.00R.

Snamprogetti S.p.A.: *See—*
Marconi, Walter; Bartoli, Francesco; Gianna, Roberto; Morisi, Franco; and Spotorno, Giuseppina. 4,248,704, Cl. 210-632.000.
Viglia, Aurelio; Fascetti, Eugenio; Perricone, Elena; and Degen, Ludwig. 4,248,967, Cl. 435-106.000.

Snodgrass, John O.: *See—*
Welch, Cletus N.; and Snodgrass, John O., 4,248,679, Cl. 204-98.000.

Snyder, Gene L., to Bendix Corporation, The. Electrical connector assembly having means for shielding against electromagnetic interference. 4,248,492, Cl. 339-89.00M.

Snyder, Solomon H., to Snyder, Solomon Halbert. Assay method and kit. 4,248,853, Cl. 424-1.000.

Snyder, Solomon Halbert: *See—*
Snyder, Solomon H., 4,248,853, Cl. 424-1.000.

Societe Anonyme de Telecommunications: *See—*
Coester, Jean Y., 4,249,265, Cl. 455-604.000.

Societe d'Etudes Scientifiques et Industrielles de l'Ile-de-France: *See—*
Thominet, Michel; Bulteau, Gerard; Acher, Jacques; and Colligon, Claude, 4,248,885, Cl. 424-274.000.

Sodeyama, Chuichi: *See—*
Shinkawa, Keiro; and Sodeyama, Chuichi, 4,249,263, Cl. 455-327.000.

Sofranko, Andrew J.: *See—*
Fuhrmann, Wilhelm; and Sofranko, Andrew J., 4,248,074, Cl. 72-247.000.

Soininen, Mauri: *See—*
Ohls, Per-Erik; and Soininen, Mauri, 4,247,990, Cl. 34-23.000.

Solomin, Vladimir A.: *See—*
Popov, Alexandr D.; Solomin, Vladimir A.; Trofimov, Vladimir A.; Mishkovich, Alexandr I.; Ponomarev, Vyacheslav A.; and Leschen, Sergei I., 4,249,114, Cl. 318-115.000.

Sony Corporation: *See—*
Iwasaki, Koichi, 4,249,222, Cl. 360-130.230.
Suzuki, Tadao; and Yoshida, Tadao, 4,249,136, Cl. 330-251.000.
Yamanaka, Seisuke, 4,249,203, Cl. 358-50.000.

Soos, Rudolf: *See—*
Szekely, Istvan; Lovasz, Marianna, nee Gaspar; Kovacs, Gabor; Soos, Rudolf; Nagy, Lajos; and Koszegi, 4,248,888, Cl. 424-306.000.

SORAPEC Societe de Recherche et d'Applications Electrochimiques: *See—*
Doniat, Denis, 4,248,684, Cl. 204-149.000.

Soriano, Rene, to Ned Strongin Associates, Inc. Chain reaction falling playing pieces board game. 4,248,433, Cl. 273-275.000.

Sova, Stanley G.: *See—*
Civardi, Frank P.; Sova, Stanley G.; and Burachinsky, Bohdan V., 4,248,652, Cl. 156-219.000.

Spaderna, Conan H. Selector switch. 4,249,045, Cl. 200-15.000.

Spadini, Gianfranco L.; and Tolliday, Ian D., to Procter & Gamble Company, The. Laundry additive product. 4,248,928, Cl. 428-286.000.

Spang, Henry A., III; and Wanger, Robert P., to United States of America, National Aeronautics and Space Administration. Apparatus for sensor failure detection and correction in a gas turbine engine control system. 4,249,238, Cl. 364-106.000.

Spann, Billy M.: *See—*
Lendvay, Andrew T.; and Spann, Billy M., 4,248,252, Cl. 131-140.00P.

Sparton Corporation: *See—*
Cole, Frederick A.; and Deak, Ronald L., 4,249,081, Cl. 250-563.000.

Specktor, Gerald A. Tram for use in an apparatus for repairing and straightening. 4,248,079, Cl. 72-465.000.

Spellman High Voltage Electronics Corporation: *See—*
Skeist, S. Merrill, 4,248,162, Cl. 108-50.000.

Sperry Corporation: *See—*
Mahoney, Frank A.; and Hutley, Ronald W. F., 4,248,148, Cl. 101-93.090.

Sperry Rand Corporation: *See—*
De Busscher, Cyriel R. J.; and Van Herpe, Francois, 4,248,248, Cl. 130-27.0HA.

Spivey, William J., Jr., to Caterpillar Tractor Co. Reset means for fluid control circuit. 4,248,134, Cl. 91-29.000.

Spivy, Paul L., to Dayco Corporation. Apparatus for and method of cutting a belt sleeve. 4,248,110, Cl. 83-53.000.

Sponseller, David R.: *See—*
Dixon, Robert C.; Graf, Walter A., Jr.; and Sponseller, David R., 4,248,668, Cl. 176-30.000.

Spotorno, Giuseppina: *See—*
Marconi, Walter; Bartoli, Francesco; Gianna, Roberto; Morisi, Franco; and Spotorno, Giuseppina, 4,248,704, Cl. 210-632.000.

Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, to International Flavors & Fragrances Inc. Use of cyclic chemical compounds for augmenting or enhancing the aroma or taste of smoking tobacco and smoking tobacco article. 4,248,250, Cl. 131-17.00R.

Sprecker, Mark A.; Kryschuk, John J.; and Hall, John B., to International Flavors & Fragrances Inc. Process for preparing substituted cyclic acetals of oxyacetaldehydes and said cyclic acetals. 4,248,787, Cl. 260-338.000.

Spring, David J.: *See—*
Rowsell, David G.; Spring, David J.; and Hems, Roger, 4,248,859, Cl. 424-54.000.

Square D Company: *See—*
Roof, Richard W., 4,249,118, Cl. 318-305.000.

Sreeves, John E., to British Industrial Plastics, Limited. Liquid coating compositions. 4,248,757, Cl. 260-32.80N.

Stacey, William F., to AEI Semiconductors Limited. Radio frequency detectors. 4,249,134, Cl. 329-205.00R.

Stadler, Paul, to Sandoz Ltd. N-9,10-Dihydrolysergyl-m-aminobenzoic acid amide derivative. 4,248,871, Cl. 421-250.000.

Stafford, Donald C., to Chicago Bridge & Iron Company. Floating roof drain. 4,248,357, Cl. 220-219.000.

Stahl-Und Apparatebau Hans Leffer GmbH: *See—*
Blaschke, Kurt; and Roob, Josef, 4,248,550, Cl. 405-232.000.

Stainless Steel Fabricating, Inc.: *See—*
Worden, Donald G., 4,248,578, Cl. 425-220.000.

Stana, Regis R.: *See—*
Camp, Floyd E.; and Stana, Regis R., 4,248,703, Cl. 210-676.000.

Standard Oil Company (Indiana): *See—*
Sharp, Shelby P.; and Yarborough, Lyman, 4,248,717, Cl. 252-8.55B.
Suffridge, Fred E.; and Kremesec, Victor J., Jr., 4,248,301, Cl. 166-252.000.
Udovich, Carl A.; Paschke, Edward E.; and Fields, Ellis K., 4,248,998, Cl. 528-296.000.

Stark, Reiner: *See—*
Skaria, Arankathu; and Stark, Reiner, 4,248,849, Cl. 423-489.000.

Stark, Ted. Portable luggage carrier. 4,248,453, Cl. 280-655.000.

Stasko, Thomas A. Aircraft docking system. 4,249,159, Cl. 340-26.000.

States, John B., Sr., to Chandler Associates, Inc. Material and methods for oil spill control and cleanup and extinguishing petroleum fires. 4,248,733, Cl. 252-355.000.

Stauffer Chemical Company: *See—*
Hornibrook, Walter J.; and Lombardi, Ronald A., 4,248,762, Cl. 260-42.220.
Hornibrook, Walter J.; and Lombardi, Ronald A., 4,248,917, Cl. 428-40.000.
Hornibrook, Walter J.; and Lombardi, Ronald A., 4,248,918, Cl. 428-40.000.

Stauffer, Norman L.; and Wilwerding, Dennis J., to Honeywell Inc. Method and apparatus for determining focus position. 4,249,073, Cl. 250-204.000.

Stedman Corporation: *See—*
Odham, Carl J., 4,248,064, Cl. 66-192.000.

Stefanick, Ronald M.: *See—*
Cham, Edward J.; and Stefanick, Ronald M., 4,249,170, Cl. 340-646.000.

Steffen, Sylvester L. Method for identifying and maintaining a dormancy index in stored grain. 4,247,989, Cl. 34-20.000.

Steigerwald, Wolf-Erhard; Ambros, Peter; and Gatzke, Erich. Method for the production of electrically conductive and solderable structures and resulting articles. 4,248,921, Cl. 428-148.000.

Stein Industrie: *See—*
Bessouat, Roger; and Marjollet, Jacques, 4,248,181, Cl. 122-483.000.

Steinhilber, Helmut. Apparatus for feeding sheets of paper from a magazine to a printing office machine. 4,248,415, Cl. 271-9.000.

Steller, Arthur H.: *See—*
Peters, Melville F., 4,248,643, Cl. 136-248.000.

Steller, Grace B.: *See—*
Peters, Melville F., 4,248,643, Cl. 136-248.000.

Stellner, Klaus: *See—*
Batz, Hans-Georg; Horn, Jurgen; Stellner, Klaus; Maier, Josef; Nelboeck-Hochstetter, Michael; and Weimann, Gunter, 4,248,786, Cl. 260-326.260.

Stemme, Otto; Lermann, Peter; Schroeder, Rolf; and Karl, Horst, to AGFA-Gevaert, A.G. Motorized still camera. 4,248,511, Cl. 354-173.000.

Stendel, Wilhelm: *See—*
Fest, Christa; Hoffmann, Hellmut; Hammann, Ingeborg; and Stendel, Wilhelm, 4,248,866, Cl. 424-200.000.

Stephens, Theodore C.: *See—*
Rubingh, Donn N.; and Stephens, Theodore C., 4,248,729, Cl. 252-174.220.

Sterling Drug Inc.: *See—*
Bell, Malcolm R.; and Oesterlin, Rudolf, 4,248,784, Cl. 260-326.200.

Stern, Ekkehard: *See—*
Muchel, Franz; Summerer, Gunther; and Stern, Ekkehard, 4,248,505, Cl. 351-7.000.

Sterrett, Robert M., to Eastman Kodak Company. Apparatus for producing sets of collated copies. 4,248,525, Cl. 355-14.0SH.

Sterzel, Hans-Josef; Schmidt, Franz; and Pirzer, Hans, to BASF Aktiengesellschaft. Preparation of linear high molecular weight saturated polyesters. 4,248,996, Cl. 528-272.000.

Stevens, C. Jim. Sliding door locking apparatus. 4,248,461, Cl. 292-218.000.

Stevens, Norman D. Solar heating apparatus. 4,248,212, Cl. 126-449.000.

Stewart, Donald E., Sr. Apparatus for storing energy and generating electricity. 4,248,043, Cl. 60-325.000.

Stienstra, Albert J., to U.S. Philips Corporation. Stereo decoder with 19KHz-pilot suppression and improved oscillator phase locking. 4,249,038, Cl. 179-1.0GD.

Stoepel, Kurt: *See—*
Bossert, Friedrich; Franckowiak, Gerhard; Heise, Arend; Kazda, Stanislav; Meyer, Horst; Stoepel, Kurt; Towart, Robertson; and Wehinger, Egbert, 4,248,873, Cl. 424-256.000.

Stok, Filippus L.: *See—*
van Spaandonk, Jacobus A. A. J.; and Stok, Filippus L., 4,249,197, Cl. 358-10.000.

Stoltefuss, Wilhelm, to Gewerkschaft Eisenhutte Westfalia. Tunnel driving apparatus with cutter arms internal and external of support tube. 4,248,481, Cl. 299-33.000.

Storey, Richard, to British Broadcasting Corporation. Video noise reduction system. 4,249,209, Cl. 358-167.000.

Storey, Richard; and Drewery, John O., to British Broadcasting Corporation. Video noise reduction system. 4,249,210, Cl. 358-167.000.

Strobel, Felix; and Kunz, Willi, to Mettler Instruments AG. Error detecting apparatus for a scale having a digital display. 4,248,316, Cl. 177-50.000.

Strobel, Wolfgang: *See*—
Mayer, Manfred; Noltner, Gerhard; Nowack, Rudolf; and Strobel, Wolfgang, 4,248,819, Cl. 264-109.000.

Strocker, Gunter: *See*—
Fischer, Gerhard; and Strocker, Gunter, 4,248,339, Cl. 198-519.000.

Stromquist, Michael E.; and Heaney, James J., to Anthony's Manufacturing Company, Inc. Multi-pane glazed door defrosting system. 4,248,015, Cl. 49-70.000.

Stroz, John J.; Bakal, Abraham I.; and Mackay, Donald A. M., to Life Savers, Inc. Dehydrated higher polyalcohols, comestibles and chewing gum containing same and method. 4,248,895, Cl. 426-3.000.

Stroz, John J.: *See*—
Mackay, Donald A. M.; Bakal, Abraham I.; and Stroz, John J., 4,248,894, Cl. 426-3.000.

Stuiber, Walter; Gluck, Otto; and Schicketanz, Rudolf, to Adlerwerke vorm. Heinrich Kleyer A.G. Tab stop assembly. 4,248,542, Cl. 400-298.000.

Suda, Seiji: *See*—
Sugiura, Noboru; and Suda, Seiji, 4,248,200, Cl. 123-644.000.

Suffridge, Fred E.; and Kremesec, Victor J., Jr., to Standard Oil Company (Indiana). Micellar crude oil displacement with partitioned hydrocarbon sulfonates. 4,248,301, Cl. 166-252.000.

Sugano, Kazuhiko: *See*—
Iwanaga, Kazuyoshi; Sugano, Kazuhiko; and Ohtsuka, Kunio, 4,248,106, Cl. 74-868.000.

Sugiura, Noboru; and Suda, Seiji, to Hitachi, Ltd. Ignition system for internal combustion engine. 4,248,200, Cl. 123-644.000.

Sugiura, Noboru: *See*—
Tsutsui, Mitsukuni; Yoshinari, Takashi; Iikubo, Toshiaki; Kawakami, Kazuhiko; and Sugiura, Noboru, 4,248,201, Cl. 123-647.000.

Sukup, Eugene G., to Sukup Manufacturing Company. Grain stirring apparatus and method. 4,248,538, Cl. 366-261.000.

Sukup Manufacturing Company: *See*—
Sukup, Eugene G., 4,248,538, Cl. 366-261.000.

Sulie, Jury N.: *See*—
Tverskoi, David N.; Kashirsky, Alexandr G.; Sulie, Jury N.; and Trofimov, Dmitry N., 4,248,108, Cl. 82-2.00R.

Sullivan, Alfred B.; and Wise, Raleigh W., to Monsanto Company. Vulcanizable rubber compositions containing N-(sulfenyl) phthalamides as scorch inhibitors. 4,248,805, Cl. 260-780.000.

Sullivan, Robert P.; and Jacobs, Clyde L., to Combustion Engineering, Inc. Mechanism for rotating and reciprocating a soot blower. 4,248,180, Cl. 122-390.000.

Sumi, Yasuo, to Nissan Motor Company, Limited. Exhaust bypass valve assembly for an exhaust gas turbo-supercharger. 4,248,047, Cl. 60-602.000.

Sumitomo Chemical Company, Limited: *See*—
Fujii, Yozo; and Yamaguchi, Hiromichi, 4,248,794, Cl. 564-133.000.
Kojimoto, Susumu; Ogawa, Tadatoshi; and Abe, Youzou, 4,248,651, Cl. 156-198.000.
Maeda, Isamu; and Aoshima, Masashi, 4,248,987, Cl. 525-366.000.

Sumitomo Chemical Industries, Ltd.: *See*—
Inamoto, Yoshiaki; Osugi, Motoyoshi; and Kashihara, Eiji, 4,248,891, Cl. 424-316.000.

Sumitomo Electric Industries, Ltd.: *See*—
Okita, Koichi, 4,248,924, Cl. 428-212.000.
Torigoe, Masahiko, 4,248,329, Cl. 188-264.00G.

Sumitomo Metal Industries Limited: *See*—
Sakai, Toshihiko; Kobayashi, Sumio; and Suzuki, Takao, 4,248,809, Cl. 264-30.000.

Summerer, Gunther: *See*—
Muchel, Franz; Summerer, Gunther; and Stern, Ekkehard, 4,248,505, Cl. 351-7.000.

Sun Electric Corporation: *See*—
Batcher, Alfred J., 4,249,171, Cl. 340-722.000.
Goss, Clinton G., 4,249,130, Cl. 324-386.000.

Sundberg, Kjell G., to Telefonaktiebolaget L M Ericsson. Power supply arrangement for a number of functional units distributed along a transmission line. 4,249,087, Cl. 307-35.000.

Suntech, Inc.: *See*—
Bleiman, Arnold M.; and Russell, Gordon A., 4,248,661, Cl. 156-584.000.

Suzue, Masayoshi: *See*—
Kinoshita, Tsukuru; Ogata, Yuzuru; and Suzue, Masayoshi, 4,248,845, Cl. 423-300.000.

Suzuki, Norihiko: *See*—
Doi, Yasuhiko; Shimizu, Shigemitsu; Matsui, Toshio; Kawai, Yoshihisa; Irie, Yutaka; Suzuki, Norihiko; and Iwao, Soichi, 4,248,523, Cl. 355-13.000.

Suzuki, Tadao; and Yoshida, Tadao, to Sony Corporation. PWM Signal power amplifier. 4,249,136, Cl. 330-251.000.

Suzuki, Takao: *See*—
Sakai, Toshihiko; Kobayashi, Sumio; and Suzuki, Takao, 4,248,809, Cl. 264-30.000.

Suzuki, Yasoji: *See*—
Sakaue, Tatsuo; Suzuki, Yasoji; and Iida, Tetsuya, 4,249,145, Cl. 333-165.000.

Suzuki, Yoshiaki: *See*—
Hara, Hiroshi; Nakamura, Kotaro; and Suzuki, Yoshiaki, 4,248,949, Cl. 430-17.000.

Suzuki, Yoshio: *See*—
Tamura, Nobuhiro; Fukuoka, Yohei; Yamamatsu, Setsuo; Suzuki, Yoshio; Mitsui, Ryoichi; and Ibuki, Tadayuki, 4,249,019, Cl. 560-208.000.

Swanson, Rollan. Process for recovering hydrocarbons and other values from tar sands. 4,248,693, Cl. 208-11.00R.

Swanson, Rollan. Desulfurizing a fuel with alkanol-alkali metal hydrosulfide solution. 4,248,695, Cl. 208-232.000.

Sweeney, Charles T. Generation of chlorine/chlorine dioxide mixtures. 4,248,681, Cl. 204-103.000.

Swinton, Walter C., to Excaliber, Incorporated. Slip-resistant binding. 4,247,967, Cl. 24-143.00R.

Swiss Aluminium Ltd.: *See*—
Skaria, Arankathu; and Stark, Reiner, 4,248,849, Cl. 423-489.000.

Sykes, Richard B.; Wells, Jerry S.; and Liu, Wen-Chih, to E. R. Squibb & Sons, Inc. 3,4-Dihydro-4-hydroxy-5-(3-hydroxy-2-pyridinyl)-4-methyl-2H-pyrrole-2-carboxamide. 4,249,008, Cl. 546-281.000.

Sylvania Circuit Breaker Corporation: *See*—
Esteves, Mabel R., 4,249,151, Cl. 335-176.000.
Vazquez, Victor R., 4,249,152, Cl. 335-176.000.

Syn-Optics: *See*—
Landre, John K., 4,248,213, Cl. 128-6.000.

System Development Corporation: *See*—
Darakjy, David L.; and Zanteson, Leland A., 4,249,033, Cl. 174-16.00R.

Szekely, Istvan; Lovasz, Marianna, nee Gaspar; Kovacs, Gabor; Soos, Rudolf; Nagy, Lajos; and Koszegi, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T. Chemical compounds. 4,248,888, Cl. 424-306.000.

T. Sendzimir, Inc.: *See*—
Verbickas, Robert C.; and Turley, John W., 4,248,073, Cl. 72-243.000.

Tabuchi, Fumiya: *See*—
Sato, Zenichi; Tabuchi, Fumiya; Takagi, Keiichiro; and Imamiya, Yoji, 4,248,779, Cl. 260-239.0BF.

Tacchi, Ernest J. Patient monitoring apparatus. 4,248,241, Cl. 128-671.000.

Taguchi, Seiji: *See*—
Tamura, Sakae; Okabe, Kyoji; Fukutake, Tsuyoshi; Taguchi, Seiji; Nagai, Tamotsu; Saino, Mitsuo; and Iwamura, Tadaaki, 4,248,625, Cl. 75-41.000.

Tahara, Tetsuo: *See*—
Kamezaki, Takashi; Hidaka, Yoshiaki; and Tahara, Tetsuo, 4,248,293, Cl. 165-51.000.

Tajima, Eiichi; Yamamoto, Kaname; and Saito, Takeshi, to Tajima Roofing Co., Ltd. Flashing sheet. 4,248,926, Cl. 428-253.000.

Tajima Roofing Co., Ltd.: *See*—
Tajima, Eiichi; Yamamoto, Kaname; and Saito, Takeshi, 4,248,926, Cl. 428-253.000.

Takagi, Keiichiro: *See*—
Sato, Zenichi; Tabuchi, Fumiya; Takagi, Keiichiro; and Imamiya, Yoji, 4,248,779, Cl. 260-239.0BF.

Takagi, Tatsuya. Oil damper fitting apparatus. 4,248,400, Cl. 248-635.000.

Takago, Toshio, to Shin-Etsu Chemical Co. Ltd. Gaunidyl-containing organosilicon compounds. 4,248,992, Cl. 528-28.000.

Takago, Toshio, to Shin-Etsu Chemical Co. Ltd. Room temperature curable organopolysiloxane. 4,248,993, Cl. 528-38.000.

Takahashi, Fumio, to Nippon Kogaku K.K. Eye fundus observing optical system. 4,248,506, Cl. 351-6.000.

Takahashi, Hiroshi: *See*—
Ito, Yutaka; Isomura, Yukihiko; Kato, Katsuhisa; Takahashi, Hiroshi; and Inaba, Masao, 4,249,212, Cl. 358-183.000.

Takahashi, Toru, to Canon Kabushiki Kaisha. Method of and apparatus for stabilizing electrophotographic images. 4,248,524, Cl. 355-14.00E.

Takai, Isao, to Oda Gosen Kogyo Kabushiki Kaisha. False twisting method and apparatus for producing crimped filament yarns. 4,248,038, Cl. 57-336.000.

Takano, Takayuki: *See*—
Watanabe, Ichiro; Satoh, Yoshiaki; and Takano, Takayuki, 4,248,968, Cl. 435-129.000.

Takasaki, Yukio: *See*—
Maruyama, Eiichi; Ataka, Saburo; Inao, Kiyohisa; Imamura, Yoshinori; Tsukada, Toshihisa; Takasaki, Yukio; and Hirai, Tadaaki, 4,249,106, Cl. 313-365.000.

Takata, Tadahiko; Kamiyoshi, Masaya; and Tanaka, Satoshi, to Teijin Limited. Process for preparing polyester fiber composite materials useful for reinforcing rubber articles. 4,248,938, Cl. 428-414.000.

Takeda Chemical Industries, Ltd.: *See*—
Kanamaru, Tsuneo; Ishimaru, Takenori; and Okazaki, Hisayoshi, 4,248,892, Cl. 424-317.000.
Minami, Isao; Yoshioka, Yoshio; and Nomura, Hiroaki, 4,249,006, Cl. 544-313.000.
Miyashita, Osamu; and Akimoto, Hiroshi, 4,248,870, Cl. 424-248.540.

Takeda, Renzo: *See*—
Uchikawa, Sadao; Izumi, Masayuki; Maruyama, Hiromi; and Takeda, Renzo, 4,248,667, Cl. 176-24.000.

Takenaga, Mutsuo; Yamamoto, Osamu; and Yamashita, Tadaoki, to Matsushita Electric Industrial Co., Ltd. Thermoluminescent material. 4,248,731, Cl. 252-301.40R.
Takeuchi, Yashuhisa; Hatori, Yukiyoshi; and Ohwada, Masatsugu, to Nissan Motor Company, Limited. Aerial trackway type tansportation system with improved speed controller. 4,248,156, Cl. 104-300.000.
Takeyama, Kunihiko: *See*—
Sawayama, Tadahiro; Kinugasa, Hiroaki; Nishimura, Haruki; Takeyama, Kunihiko; and Hosoki, Kanoo, 4,248,883, Cl. 424-274.000.
Takita, Ichiro: *See*—
Yomota, Junji; Kurashina, Fumiaki; Kamiide, Mareyasu; and Takita, Ichiro, 4,248,638, Cl. 106-56.000.
Talsma, Robert C.: *See*—
Adamski, Maximilian, Jr.; Talsma, Robert C.; Kosrow, Robert L.; and Bernstein, Benjamin T., 4,248,170, Cl. 112-318.000.
Tamm, Ulf, S. H. Occlusive sphygmomanometer for the measuring of the arterial blood pressure. 4,248,242, Cl. 128-678.000.
Tamura, Nobuhiro; Fukuoka, Yohei; Yamamatsu, Setsuo; Suzuki, Yoshio; Mitsui, Ryoichi; and Ibuki, Tadayuki, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for producing carboxylic esters. 4,249,019, Cl. 560-208.000.
Tamura, Sakae; Okabe, Kyoji; Fukutake, Tsuyoshi; Taguchi, Seiji; Nagai, Tamotsu; Saino, Mitsuo; and Iwamura, Tadaaki, to Kawasaki Steel Corporation. Method of operating a blast furnace. 4,248,625, Cl. 75-41.000.
Tamura, Takashi: *See*—
Aoi, Hajime; Tamura, Takashi; Koizumi, Makoto; Kunimi, Noboru; Enomoto, Minoru; and Hatanaka, Noriaki, 4,249,219, Cl. 360-46.000.
Tanaka, Satoshi: *See*—
Takata, Tadahiko; Kamiyoshi, Masaya; and Tanaka, Satoshi, 4,248,938, Cl. 428-414.000.
Tanaka, Takeo: *See*—
Nanya, Takashi; and Tanaka, Takeo, 4,249,246, Cl. 364-716.000.
Tanaka, Toshie: *See*—
Yuda, Takuo; Tanaka, Toshie; and Watanabe, Koji, 4,248,470, Cl. 294-87.200.
Tanaka, Yoko: *See*—
DeLuca, Hector F.; Tanaka, Yoko; Ikekawa, Nobuo; and Kobayashi, Yoshiro, 4,248,791, Cl. 260-397.200.
Tanaka, Yukiyasu: *See*—
Noguchi, Masaaki; Tanaka, Yukiyasu; and Igarashi, Isao, 4,248,183, Cl. 123-51.00B.
Tanimura, Masamitsu: *See*—
Murakami, Ichiro; Sasaki, Shosaku; and Tanimura, Masamitsu, 4,248,750, Cl. 260-29.1SB.
Tarbox, Philip B.: *See*—
Martin, Charles R.; Tarbox, Philip B.; and Yates, Stephen W., 4,248,037, Cl. 57-263.000.
Tavel, Donald L. Music synthesizer. 4,248,122, Cl. 84-1.190.
Tawara, Katsuya: *See*—
Ogata, Masaru; Watanabe, Yoshihachi; Matsumoto, Hiroshi; and Tawara, Katsuya, 4,248,869, Cl. 424-248.500.
Taylor, Frank. Method of making yogurt. 4,248,898, Cl. 426-43.000.
Taylor, Joseph P., to Smiths Industries Limited. Valve assemblies. 4,248,235, Cl. 128-349.00R.
Taylor, Keith A. Method and machine structure for finger jointing of lumber. 4,248,280, Cl. 144-3.00R.
Taylor, Maurice I.: *See*—
Wilde, Geoffrey L.; Taylor, Maurice I.; and Medland, Geoffrey P., 4,248,041, Cl. 60-226.00R.
TDK Electronics Company, Limited: *See*—
Saito, Shunjiro; Ishibashi, Saburo; and Shimojo, Nobuei, 4,248,906, Cl. 427-125.000.
Uehori, Tatsuo; and Horiboto, Ryouichi, 4,248,907, Cl. 427-127.000.
Teijin Limited: *See*—
Takata, Tadahiko; Kamiyoshi, Masaya; and Tanaka, Satoshi, 4,248,938, Cl. 428-414.000.
Tektronix, Inc.: *See*—
Barta, Gary S., 4,249,133, Cl. 328-123.000.
McKibben, Barry A., 4,249,112, Cl. 315-382.000.
Teldec-Telefunken-Decca Schallplatten GmbH: *See*—
Knothe, Herbert; Redlich, Horst; and Roschmann, Klaus, 4,248,438, Cl. 369-127.000.
Teledyne Industries, Inc.: *See*—
Adair, William A.; and Johnson, Lyle A., 4,248,161, Cl. 108-6.000.
Telefonaktiebolaget L M Ericsson: *See*—
Sundberg, Kjell G., 4,249,087, Cl. 307-35.000.
Temco Products, Inc.: *See*—
Thomas, Morton I., 4,248,256, Cl. 135-67.000.
Temple, Chester S., to PPG Industries, Inc. Storage stable polyolefin compatible non-crosslinking size for fiber glass strands. 4,248,935, Cl. 428-391.000.
Terahara, Akira: *See*—
Oka, Hidehiko; Terahara, Akira; and Endo, Akira, 4,248,889, Cl. 424-308.000.
Terumo Corporation: *See*—
Ikeda, Tatsuhiko, 4,248,246, Cl. 128-765.000.
Tetra Pak International AB: *See*—
Berg, Nils R. F., 4,248,351, Cl. 206-620.000.
Texaco Inc.: *See*—
Chafetz, Harry; and Lee, Gary D., 4,248,719, Cl. 252-34.000.
Woldy, Paul N.; Kaufman, Harold C.; Dach, Michael M.; and Beall, James F., 4,248,604, Cl. 48-197.00R.
Yaffe, Roberta, 4,248,721, Cl. 252-46.700.
Texas Instruments Incorporated: *See*—
Kwan, Stephen C., 4,249,123, Cl. 323-314.000.
Rogers, Gerald D., 4,249,194, Cl. 357-51.000.
Texas Iron Works, Inc.: *See*—
Braddick, Britt O., 4,248,300, Cl. 166-250.000.
Textron, Inc.: *See*—
Moertel, George B., 4,247,968, Cl. 24-205.13C.
Th. Goldschmidt AG: *See*—
Koerner, Gotz; Schmidt, Gunter; and Nickel, Friedhelm, 4,248,590, Cl. 8-128.00A.
Thebert, Glenn W., to General Motors Corporation. Stator mounting. 4,248,569, Cl. 415-138.000.
Theodore, Frank W.; Wasson, George E.; Jasulaitis, William A.; and Gorin, Everett, to Continental Oil Company. Process for making metallurgical coke using fluidizer char. 4,248,669, Cl. 201-6.000.
Thermacore, Inc.: *See*—
Ernst, Donald M.; and Sanzi, James L., 4,248,295, Cl. 165-105.000.
Thesz, Adam A. Live fish bait attacher. 4,248,003, Cl. 43-44.800.
Theurer, Josef, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Mobile track tamping machine with lifting and lining equipment. 4,248,154, Cl. 104-7.00B.
Theurer, Josef, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Method for obtaining a controlled degree of ballast compaction in the tamping and leveling of a track. 4,248,155, Cl. 104-12.000.
Thiele, Walter E.: *See*—
Livers, Gerald D.; Schafer, Douglas R.; and Thiele, Walter E., 4,249,046, Cl. 200-61.45R.
Thiokol Corporation: *See*—
Bell, Frank H.; and Bair, Denzel H., 4,248,084, Cl. 73-191.000.
Thode, Lester E., to United States of America, Energy. Device and method for relativistic electron beam heating of a high-density plasma to drive fast liners. 4,248,665, Cl. 176-1.000.
Thoma, Wilhelm: *See*—
Pedain, Josef; and Thoma, Wilhelm, 4,248,910, Cl. 427-208.400.
Thomas & Betts Corporation: *See*—
Kuo, Ted L. C., 4,248,493, Cl. 339-97.00R.
Thomas, Charles L.; and Carapella, Sam C., to ASARCO Incorporated. Process for the production of photoconductive zinc oxide of improved electrophotographic properties, and product thereof. 4,248,953, Cl. 430-88.000.
Thomas, Eugene P., to CGR Medical Corporation. Front and back loading dual cassette size spot filmer. 4,249,079, Cl. 250-468.000.
Thomas, John C.: *See*—
Fischer, David J.; Narske, Richard M.; Thomas, John C.; and Worthington, Edward J., Jr., 4,248,972, Cl. 435-292.000.
Thomas, Joseph J.: *See*—
Assenza, John S.; and Thomas, Joseph J., 4,248,234, Cl. 128-348.000.
Thomas, Morton I., to Temco Products, Inc. Platform crutch attachment for an invalid walker. 4,248,256, Cl. 135-67.000.
Thomas, Ralph H., to Bristol-Myers Company. Fluid unit dispensing device. 4,248,227, Cl. 128-232.000.
Thominet, Michel; Bulteau, Gerard; Acher, Jacques; and Collignon, Claude, to Societe d'Etudes Scientifiques et Industrielles de l'Ile-de-France. Substituted 2,3-alkylene bis(oxy) benzamides and derivatives to treat psychofunctional disorders. 4,248,885, Cl. 424-274.000.
Thompson, Fremont G.; Vogel, Lewis P.; and Wagner, Eugene R. Container sorting and handling system. 4,248,389, Cl. 241-101.500.
Thompson, Leon E., to American Glass Research, Inc. Rotator for inspecting containers. 4,248,338, Cl. 198-379.000.
Thompson Marine Corporation: *See*—
Granger, Steven T., 4,248,707, Cl. 210-695.000.
Thompson, Robert A.; and Wang, Hsin-Pang, to General Electric Company. Measurement of residual stresses by local melting. 4,248,094, Cl. 73-760.000.
Thompson, Robert B.: *See*—
Vasile, Carmine F.; Thompson, Robert B.; and Fortunko, Christopher M., 4,248,092, Cl. 73-643.000.
Thompson, William E.: *See*—
Perrella, Guido; and Thompson, William E., 4,248,289, Cl. 164-153.000.
Thomson-CSF: *See*—
Bui Hai, Nhu, 4,249,183, Cl. 343-781.00R.
Crochet, Michel; and Lecoi, Georges, 4,249,264, Cl. 455-612.000.
Diamand, Felix; Bourrabier, Guy; and Antoine, Robert, 4,249,149, Cl. 333-223.000.
Pircher, Georges, 4,248,535, Cl. 356-350.000.
Thuillier, Jacques: *See*—
Pons, Fernand; and Thuillier, Jacques, 4,248,629, Cl. 75-122.000.
Tilton, Frederick T.: *See*—
Silberman, Raphael J.; Tilton, Frederick T.; Smith, Everett H.; and Wichkoski, Dennis A., 4,248,307, Cl. 166-315.000.
Timex Corporation: *See*—
Wuthrich, Paul, 4,249,251, Cl. 368-76.000.
Tipton, James A. Trolley for installing prefabricated building panels. 4,248,026, Cl. 52-749.000.
Tivy, Vincent V. Flow meter. 4,249,164, Cl. 340-870.300.
Tobitani, Hiroshi: *See*—
Tsuzuki, Akira; and Tobitani, Hiroshi, 4,248,562, Cl. 414-212.000.
Toda, Eiji, to Kabushiki Kaisha Komatsu Seisakusho. Reclining seat for vehicle. 4,248,479, Cl. 297-378.000.
Toelle, Alvin D., to Bendix Corporation, The. Open loop compensation circuit. 4,248,196, Cl. 123-489.000.

Togari, Osamu: *See—*
Wakabayashi, Motoyoshi; Ono, Takeo; Togari, Osamu; and Nakamura, Munekazu, 4,248,852, Cl. 423-626.000.
Togulev, Alexandr K.: *See—*
Basov, Nikolai G.; Berezhnoi, Igor A.; Vekshin, Vyacheslav S.; Danilychev, Vladimir A.; Elatontsev, Albert I.; Ignatiev, Vladimir V.; Karyshev, Vitaly D.; and Togulev, Alexandr K., 4,249,158, Cl. 340-26.000.
Tohma, Hideaki: *See—*
Uehara, Kazuo; Tohma, Hideaki; and Sato, Yoshito, 4,248,573, Cl. 417-216.000.
Uehara, Kazuo; Tohma, Hideaki; and Sato, Yoshito, 4,248,574, Cl. 417-216.000.
Tokumitsu, Ichiro, to Idemitsu Petrochemical Co. Ltd. Apparatus for quenching pyrolysis gas. 4,248,834, Cl. 422-200.000.
Tokuyama Soda Kabushiki Kaisha: *See—*
Kato, Shozo, 4,248,677, Cl. 204-59.00R.
Tokyo Broadcasting System Inc.: *See—*
Ito, Yutaka; Inaba, Masao; Mizukami, Mineo; and Shimizu, Mikio, 4,249,198, Cl. 358-13.000.
Ito, Yutaka; Isomura, Yukihiko; Kato, Katsuhisa; Takahashi, Hiroshi; and Inaba, Masao, 4,249,212, Cl. 358-183.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Hashiguchi, Mutsuo, 4,248,091, Cl. 73-631.000.
Oda, Kanji; and Nakano, Hisashi, 4,249,259, Cl. 455-182.000.
Okumura, Hiroyuki, 4.249,050, Cl. 200-144.00B.
Sakaue, Tatsuo; Suzuki, Yasoji; and Iida, Tetsuya, 4,249,145, Cl. 333-165.000.
Yoshizumi, Akira; Ikeya, Hirotoshi; and Wada, Moriyasu, 4,248,920, Cl. 428-76.000.
Tokyo Shibaura Electric Co., Ltd.: *See—*
Kato, Yasuhiro; Sekiguchi, Nobuo; and Yosida, Sizuo, 4,249,227, Cl. 361-334.000.
Matsuda, Takashi, 4,248,948, Cl. 430-5.000.
Tolliday, Ian D.: *See—*
Spadini, Gianfranco L.; and Tolliday, Ian D., 4,248,928, Cl. 428-286.000.
Tomidokoro, Susumu; Sato, Michito; and Saika, Daini, to Lion Fat & Oil Co., Ltd., The. Process for the production of tertiary amine having long chain alkyl group. 4,248,801, Cl. 564-463.000.
Tominaga, Shigetake: *See—*
Yoshimura, Tatsushiro; and Tominaga, Shigetake, 4,248,763, Cl. 260-42.220.
Tominoi, Kunitada, to AMP Incorporated. Wire feed and contact insertion apparatus. 4,247,980, Cl. 29-742.000.
Tomosada, Masaaki, to Razor Saw Manufacturing Co., Ltd. Hand saw with an interchangeable saw blade. 4,248,284, Cl. 145-31.00R.
Toole, Nicolle A. Rock crushing machine with rotary eccentric jaw driving mechanism. 4,248,390, Cl. 241-263.000.
Toomey, Robert D.; Davis, Brian R.; Neelameggham, Ramaswami; and Darlington, R. Keith, to NL Industries, Inc. Chlorination of impure magnesium chloride melt. 4,248,839, Cl. 423-178.000.
Topfer, Hans J., deceased: *See—*
Papst, Gero; Ropke, Gunther; and Topfer, Hans J., deceased, 4,248,623, Cl. 75-35.000.
Toray Silicone Company, Ltd.: *See—*
Murakami, Ichiro; Sasaki, Shosaku; and Tanimura, Masamitsu, 4,248,750, Cl. 260-29.1SB.
Torbeck, Frank W. Bonding structure for manifold assemblies. 4,248,457, Cl. 282-7.000.
Torigoe, Masahiko, to Sumitomo Electric Industries, Ltd. Disc brakes having an improved dust-proofing structure. 4,248,329, Cl. 188-264.00G.
Toshiba Kikai Kabushiki Kaisha: *See—*
Yoshida, Tetsu; and Morimoto, Isao, 4,249,243, Cl. 364-474.000.
Tosin, Albert: *See—*
More, Anton; and Tosin, Albert, 4,248,631, Cl. 75-257.000.
Towart, Robertson: *See—*
Bossert, Friedrich; Franckowiak, Gerhard; Heise, Arend; Kazda, Stanislav; Meyer, Horst; Stoepel, Kurt; Towart, Robertson; and Wehinger, Egbert, 4,248,873, Cl. 424-256.000.
Toyo Ink Manufacturing Co., Ltd.: *See—*
Ihida, Kazuyoshi, 4,248,997, Cl. 528-272.000.
Toyo Soda Manufacturing Co., Ltd.: *See—*
Murakami, Tsugio; Kikuchi, Mitsuo; and Igawa, Kazushige, 4,248,848, Cl. 423-474.000.
Toyoda-Koki Kabushiki-Kaisha: *See—*
Yomogida, Toshihiko; and Yokota, Tsuyoshi, 4,249,248, Cl. 364-900.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Matsui, Takeshi; Kohama, Tokio; Kawai, Hisasi; Nishimatsu, Akira; Ina, Toshikazu; Nohira, Hidetaka; and Kobashi, Kiyoshi, 4,248,187, Cl. 123-568.000.
Motonami, Masanao; Yasumatsu, Jun; and Kubota, Tatsushi, 4,248,456, Cl. 280-802.000.
Noguchi, Masaaki; Tanaka, Yukiyasu; and Igarashi, Isao, 4,248,183, Cl. 123-51.00B.
Tram/Diamond Corporation: *See—*
Morgan, Daniel G., 4,249,127, Cl. 324-57.00R.
Trevino, Rene: *See—*
Doyle, Earl N.; Trevino, Rene; and Hicks, Richard S., 4,248,811, Cl. 264-46.600.
Trimbee, Robert J. Packaging for florist arrangements. 4,248,347, Cl. 206-423.000.
Trimble, Ronald L. Retainer for toilet articles. 4,248,254, Cl. 132-84.00D.
Tringali, Dominick: *See—*
McLain, Philippe H.; Shrontz, Robert J.; and Tringali, Dominick, 4,248,062, Cl. 64-1.00S.
Triomf Fertilizer (Proprietary) Ltd.: *See—*
Williams, Charles S.; and Gerber, Jacobus J., 4,248,843, Cl. 423-321.00R.
Trocciola, John C.: *See—*
Louis, George A.; Lee, John M.; Maricle, Donald L.; and Trocciola, John C., 4,248,941, Cl. 429-13.000.
Trofimov, Dmitry N.: *See—*
Tverskoi, David N.; Kashirsky, Alexandr G.; Sulie, Jury N.; and Trofimov, Dmitry N., 4,248,108, Cl. 82-2.00R.
Trofimov, Vladimir A.: *See—*
Popov, Alexandr D.; Solomin, Vladimir A.; Trofimov, Vladimir A.; Mishkovich, Alexandr I.; Ponomarev, Vyacheslav A.; and Leschen, Sergei I., 4,249,114, Cl. 318-115.000.
Trotter, Barry W. Fishing rig holder. 4,248,004, Cl. 43-54.50R.
True Med, Inc.: *See—*
Kilstofte, Ray R., 4,248,176, Cl. 119-72.000.
Truszczinski, Helmet, to Gewerkschaft Eisenhutte Westfalia. Curved conveyor section guide assembly. 4,248,482, Cl. 299-34.000.
TRW Inc.: *See—*
Allen, Reginald A., 4,249,092, Cl. 307-221.00D.
Blumenthal, Jack I.; Burk, Maksymilian; and Richardson, Neal A., 4,248,627, Cl. 75-42.000.
Drutchas, Gilbert H.; and Wormley, David N., 4,248,194, Cl. 123-357.000.
Yen, Kuo-Hsiung; Lau, Kei-Fung; and Kagiwada, Reynold S., 4,249,146, Cl. 333-195.000.
Tsuboka, Eiichi: *See—*
Baba, Takaaki; Kitani, Teruo; Nakazawa, Masao; Yoshino, Hirokazu; Fujita, Tatsuo; and Tsuboka, Eiichi, 4,249,211, Cl. 358-183.000.
Tsuchida, Seiichi: *See—*
Matsuo, Kohtaro; and Tsuchida, Seiichi, 4,248,770, Cl. 260-104.000.
Tsukada, Toshihisa: *See—*
Maruyama, Eiichi; Ataka, Saburo; Inao, Kiyohisa; Imamura, Yoshinori; Tsukada, Toshihisa; Takasaki, Yukio; and Hirai, Tadaaki, 4,249,106, Cl. 313-365.000.
Tsutsui, Kotaroh, to Alps Electric Co., Ltd. Push button switch. 4,249,053, Cl. 200-153.00J.
Tsutsui, Mitsukuni; Yoshinari, Takashi; Iikubo, Toshiaki; Kawakami, Kazuhiko; and Sugiura, Noboru, to Hitachi, Ltd. Molded ignition device. 4,248,201, Cl. 123-647.000.
Tsuzuki, Akira; and Tobitani, Hiroshi, to Koritsu Kikai Kogyo Company Limited. Coke guide car. 4,248,562, Cl. 414-212.000.
Tucker, Raymon Z., to Roll Form Corporation. Pull type cut-off press. 4,248,109, Cl. 83-37.000.
Tucker, Robert J.; and Hoffman, Joseph A., to American Cyanamid Company. Nickel salt-ester stabilizing compositions. 4,248,594, Cl. 8-583.000.
Tung, Chi F.; and Frost, George W., Jr., to Minnesota Mining and Manufacturing Company. Extended-life pavement-marking sheet material. 4,248,932, Cl. 428-325.000.
Turley, John W.: *See—*
Verbickas, Robert C.; and Turley, John W., 4,248,073, Cl. 72-243.000.
Turner, Charles R.; and Turner, Roger S. Self-priming parenteral administering apparatus. 4,248,223, Cl. 128-214.00C.
Turner, David L. Means for selectively transmitting drive. 4,248,045, Cl. 60-537.000.
Turner & Newall Limited: *See—*
Atkinson, Alan W.; Clucas, Richard H.; Lancaster, Robert A.; and Perkins, Allen M., 4,248,664, Cl. 162-145.000.
Turner, Roger S.: *See—*
Turner, Charles R.; and Turner, Roger S., 4,248,223, Cl. 128-214.00C.
Tverskoi, David N.; Kashirsky, Alexandr G.; Sulie, Jury N.; and Trofimov, Dmitry N. Lathe. 4,248,108, Cl. 82-2.00R.
Twyman, Harold F.: *See—*
Zettler, John F.; and Twyman, Harold F., 4,249,074, Cl. 250-221.000.
TX RX Systems Inc.: *See—*
Kaegebein, Daniel P., 4,249,147, Cl. 333-202.000.
Ube-Nitto Kasei Co., Ltd.: *See—*
Negi, Youji; Iwata, Kouji; and Sakai, Kazuhiko, 4,248,991, Cl. 526-331.000.
Uchida, Hiromu; and Yanabu, Osamu, to Nippon Steel Corporation. Method for treating steel plate and its manufacture. 4,248,676, Cl. 204-56.00R.
Uchikawa, Sadao; Izumi, Masayuki; Maruyama, Hiromi; and Takeda, Renzo, to Hitachi, Ltd. Method of operating nuclear reactors. 4,248,667, Cl. 176-24.000.
Uchinuma, Kazuo; and Sasaki, Umekichi, to Nippon Oil Co., Ltd.; Mitsubishi Jukogyo Kabushiki Kaisha; and Sanyo Chemical Industries, Ltd. High-viscosity refrigerator oil compositions. 4,248,726, Cl. 252-52.00A.
Udovich, Carl A.; Paschke, Edward E.; and Fields, Ellis K., to Standard Oil Company (Indiana). 2,3-Di-(carboxyphenyl)oxirane compounds and polymers. 4,248,998, Cl. 528-296.000.
Ueda, Ichiro: *See—*
Kawashima, Syunichiro; Nishida, Masamitsu; Ueda, Ichiro; and Ouchi, Hiromu, 4,248,727, Cl. 106-46.000.
Ueda, Masao: *See—*
Hozumi, Keiichi; Nishikaichi, Yuji; Ueda, Masao; Miura, Tatsuya; and Yamamoto, Hirotoshi, 4,249,062, Cl. 219-124.340.

Uehara, Kazuo; Tohma, Hideaki; and Sato, Yoshito, to Kabushiki Kaisha Komatsu Seisakusho. Hydraulic control system for variable displacement pump. 4,248,573, Cl. 417-216.000.

Uehara, Kazuo; Tohma, Hideaki; and Sato, Yoshito, to Kabushiki Kaisha Komatsu Seisakusho. Hydraulic control system for variable displacement pumps. 4,248,574, Cl. 417-216.000.

Uehori, Tatsuo; and Horiboto, Ryouichi, to TDK Electronics Company, Limited. Process for preparing magnetic powder. 4,248,907, Cl. 427-127.000.

Ueno, Haruo: *See—*
Ohishi, Tetsu; Handa, Kohichi; and Ueno, Haruo, 4,248,985, Cl. 525-327.000.

Uetrecht, Dale M.: *See—*
Bunger, David A.; and Uetrecht, Dale M., 4,248,123, Cl. 84-1.260.

Unarco Industries, Inc.: *See—*
Kleine, Richard A.; and Byers, Warren J., 4,248,025, Cl. 52-731.000.

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Chan, John K., 4,248,795, Cl. 564-255.000.
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Unit Rig & Equipment Co.: *See—*
Fornell, Robert M., 4,248,046, Cl. 60-567.000.

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Ellwood, Derek C.; Manchee, Richard J.; and Robinson, Andrew, 4,248,862, Cl. 424-92.000.

United States Borax & Chemical Corporation: *See—*
Wilson, Martin, 4,248,708, Cl. 210-727.000.

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Agriculture: *See—*
Frank, Arlen W., 4,249,017, Cl. 560-148.000.
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Air Force: *See—*
Chen, Pin-Wei, 4,249,177, Cl. 343-7.00A.
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Durenec, Peter, 4,248,050, Cl. 62-6.000.
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Spang, Henry A., III; and Wanger, Robert P., 4,249,238, Cl. 364-106.000.
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Balmuth, Edward S., 4,248,630, Cl. 75-135.000.
Campbell, Kenneth J., 4,249,257, Cl. 455-115.000.
Eden, J. Gary, 4,249,143, Cl. 331-94.50G.
Hardesty, Thomas K. C., 4,248,257, Cl. 137-68.00A.
Lukens, Herbert R., Jr., 4,248,854, Cl. 424-8.000.
Mapes, Theodore J., 4,249,225, Cl. 361-152.000.
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Bodart, Robert; and Werts, Jean P. A. R. J., 4,249,254, Cl. 375-117.000.
Bruinsma, Anne H., 4,249,200, Cl. 358-22.000.
Haenen, Henricus W. G.; Hesselmann, Gerardus J. M.; and Needs, Howard C., 4,249,208, Cl. 358-164.000.
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Aiken, John E.; Didycz, William J.; and Kerkentzes, Stanley J., 4,248,832, Cl. 422-177.000.

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Fradenburgh, Evan A., 4,248,572, Cl. 416-228.000.
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Goward, George W.; Grey, Delton A.; and Krutenat, Richard C., 4,248,940, Cl. 428-633.000.

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Louis, George A.; Lee, John M.; Maricle, Donald L.; and Trocciola, John C., 4,248,941, Cl. 429-13.000.

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Fischer, David J.; Narske, Richard M.; Thomas, John C.; and Worthington, Edward J., Jr., 4,248,972, Cl. 435-292.000.

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Barber, Alvan W.; and James, Leslie M. L., 4,248,189, Cl. 123-169.0PA.

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Hughes, Terence C., 4,248,831, Cl. 422-102.000.

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Carlson, David H. J.; and Urban, Peter, 4,248,694, Cl. 208-206.000.
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Smith, Herman W., 4,249,016, Cl. 560-53.000.

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Usinger, Roger. Hitch assembly. 4,248,451, Cl. 280-490.00R.

Vadekar, Mohan, to Exxon Research & Engineering Co. Process for removing oil from oily waste water streams. 4,248,705, Cl. 210-680.000.

Vaidya, Upen I., to Du Pont de Nemours, E. I., and Company. Colorable, peroxide curable chlorinated polymer. 4,248,764, Cl. 260-42.330.

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Lindstrom, Yngve, 4,247,993, Cl. 34-156.000.

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van Eykern, Leo A., to Rijksuniversiteit te Groningen. Apparatus for detecting the activity of the respiratory organs and the heart of a living being. 4,248,240, Cl. 128-671.000.

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Van Huisen, Allan T.; and Griffin, Paul E. Geothermal petroleum refining. 4,248,306, Cl. 166-305.00R.

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Vaponics Inc.: *See—*
Smith, Verity C., 4,248,672, Cl. 203-11.000.

Varma, Ravi K.; and Vogt, B. Richard, to E. R. Squibb & Sons, Inc. Steroids having a 3-(4-hydroxyphenyl)pentanedioic acid monohydrazide substituent. 4,248,783, Cl. 260-239.55D.

Vasile, Carmine F.; Thompson, Robert B.; and Fortunko, Christopher M., to Electric Power Research Institute, Inc. Method and apparatus for efficiently generating elastic waves with a transducer. 4,248,092, Cl. 73-643.000.

Vasiliev, Petr E.; Klimavichjus, Prantsishkus-Algirdas R.; Kondratiev, Alexandr V.; Matsjukyavichjus, Juozas J.; Beksha, Gabrieljus-Vitautas L.; and Kaminskas, Vitautas A. Drive means and force control for piezoelectric vibration motor. 4,249,100, Cl. 310-317.000.

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Vazquez, Victor R., to Sylvania Circuit Breaker Corporation. Magnetic trip adjustment based on spring load variation. 4,249,152, Cl. 335-176.000.

VDO Adolf Schindling AG: *See—*
Collonia, Harald, 4,248,321, Cl. 180-179.000.

Veale, John P.: *See—*
Hawley, Royal T.; Veale, John P.; and Odell, Jack L., II, 4,248,019, Cl. 51-45.000.

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Kallies, Karl-Heinz; and Winkler, Manfred, 4,248,830, Cl. 422-59.000.
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Veb Jenapharm: *See—*
Ponsold, Kurt; Hubner, Michael; and Oettell, Michael, 4,248,790, Cl. 260-397.400.

Veba-Chemie Aktiengesellschaft: *See—*
Gude, Fritz; and Brandt, Siegfried, 4,248,654, Cl. 156-331.000.

Vekshin, Vyacheslav S.: *See—*
Basov, Nikolai G.; Berezhnoi, Igor A.; Vekshin, Vyacheslav S.; Danilychev, Vladimir A.; Elatontsev, Albert I.; Ignatiev, Vladi-

mir V.; Karyshev, Vitaly D.; and Togulev, Alexandr K., 4,249,158, Cl. 340-26.000.
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Verhoeven, Teunes: *See*—
Downing, James W.; and Verhoeven, Teunes, 4,248,105, Cl. 74-710.500.
Verjux, Jean, to Decoufle S.A.R.L. Cutter guide drive for cigarette-making machine. 4,248,113, Cl. 83-310.000.
Vessels, John B. Agricultural spray nozzle with fluid operated orifice cleaning member. 4,248,381, Cl. 239-118.000.
Victor Company of Japan, Ltd.: *See*—
Yasutake, Katsuya; and Morita, Akiyoshi, 4,249,220, Cl. 360-73.000.
Victor Equipment Company: *See*—
Zwicker, Roger D., 4,248,384, Cl. 239-419.300.
Vida, Julius A.: *See*—
Samour, Carlos M.; and Vida, Julius A., 4,249,005, Cl. 544-302.000.
Vierimaa, Donald W. Rotating surface pinball game. 4,248,427, Cl. 273-110.000.
Viglia, Aurelio; Fascetti, Eugenio; Perricone, Elena; and Degen, Ludwig, to Snamprogetti S.p.A. Enzymic complexes adapted to convert racemic hydantoins into optically active aminoacids, and their applications. 4,248,967, Cl. 435-106.000.
Vilches, Ernest. Game apparatus and paddle therefor. 4,248,428, Cl. 273-118.00R.
Villanueva, Juan T.; and Felizardo, Manuel I. Scheme for harnessing hydroundulatory power. 4,249,084, Cl. 290-53.000.
Vinals, Joaquin F.: *See*—
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,248,250, Cl. 131-17.00R.
Vinciguerra, Costantino, to Nuovo Pignone S.p.A. Process for applying a thick inset of antifriction resins on a surface. 4,248,915, Cl. 427-292.000.
Vines, James K. Antenna arm and method for making the arm. 4,249,184, Cl. 343-840.000.
Virlan, Grigore: *See*—
Ciobanu, Pia; Pop, Ioan; and Virlan, Grigore, 4,248,923, Cl. 428-197.000.
Vistan Corporation: *See*—
Margaroli, John L.; and Cimperman, Frederick J., 4,248,903, Cl. 426-512.000.
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Vock, Manfred H.: *See*—
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Vogel, Lewis P.: *See*—
Thompson, Fremont G.; Vogel, Lewis P.; and Wagner, Eugene R., 4,248,389, Cl. 241-101.500.
Vogl, Herbert: *See*—
Bachner, Alfred; and Vogl, Herbert, 4,248,319, Cl. 178-3.000.
Vogt, B. Richard: *See*—
Varma, Ravi K.; and Vogt, B. Richard, 4,248,783, Cl. 260-239.55D.
Vollers, Charles S.: *See*—
Myers, John D.; and Vollers, Charles S., 4,248,732, Cl. 252-301.60P.
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Hanrot, Jean-Pascal; and Volpeliere, Jacky, 4,248,277, Cl. 141-93.000.
von Zeppelin, Dieter; and Sipli, Wolfgang. Forceps. 4,248,233, Cl. 128-323.000.
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Votta, Gerald A.; and Weston, Donald E., to Electric Power Research Institute, Inc. Arc spinner interrupter with chromium copper arcing contact. 4,249,052, Cl. 200-147.00R.
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Hein, Paul R.; Yang, Michael W.; Irvin, Robert A.; Bauer, Steven E.; and Orem, Roland L., 4,248,960, Cl. 430-306.000.
Hill, Richard N., 4,248,846, Cl. 423-317.000.
Vaughan, David E. W.; Lussier, Roger J.; and Magee, John S., Jr., 4,248,739, Cl. 252-455.00R.
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More, Anton; and Tosin, Albert, 4,248,631, Cl. 75-257.000.
Wada, Moriyasu: *See*—
Yoshizumi, Akira; Ikeya, Hirotoshi; and Wada, Moriyasu, 4,248,920, Cl. 428-76.000.
Wade, Wallace R.: *See*—
Choma, Michael A.; Simko, Aladar O.; Schechter, Michael M.; and Wade, Wallace R., 4,248,193, Cl. 123-341.000.
Wagener & Co.: *See*—
Eberhard, Rolf; and Maiwurm, Ulrich, 4,249,066, Cl. 219-243.000.
Wagle, Uday D.; and Belford, Timothy J., to Pennwalt Corporation. Manufacture of organic hydrazines. 4,248,800, Cl. 564-464.000.
Wagner, Eugene R.: *See*—
Thompson, Fremont G.; Vogel, Lewis P.; and Wagner, Eugene R., 4,248,389, Cl. 241-101.500.
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Wagster, Robert P.; and Onken, Carl H., Jr., to Black and Decker, Inc. Apparatus for supporting a work piece. 4,248,411, Cl. 269-67.000.
Wakabayashi, Akira; Watanabe, Shoichi; Sato, Koji; Kohama, Hiroyuki; and Sakuma, Katsumi, to Kobe Steel, Limited. Apparatus for cleaning and recovering power from blast furnace exhaust gas. 4,248,612, Cl. 55-350.000.
Wakabayashi, Motoyoshi; Ono, Takeo; Togari, Osamu; and Nakamura, Munekazu, to Chiyoda Chemical Engineering & Construction Co., Ltd. Process for the production of alumina suitable for use as a catalyst carrier. 4,248,852, Cl. 423-626.000.
Waldman, Harold L.: *See*—
Beede, Charles H.; Waldman, Harold L.; and Blumig, Theodore, 4,248,685, Cl. 204-159.220.
Waldron, Richard W.; and Cieri, James S. Template generator. 4,248,282, Cl. 144-144.00R.
Walker, Anthony R.: *See*—
Eberle, Gernot; Walker, Anthony R.; Goodchild, William; and Humbert-Droz, Patrice L. D., 4,249,180, Cl. 375-2.000.
Walker, C. Murchison, to Weather Control Shutters, Inc. Exterior window shutter assembly. 4,248,022, Cl. 52-473.000.
Wallace, Leland C. Process for baking bread. 4,248,896, Cl. 426-19.000.
Wallace, Walter M.; and Craven, Geoffrey F., to Norton-Harty Colliery Engineering Limited. Stratifier discharge control. 4,248,702, Cl. 209-455.000.
Wallick, Scott A., to Black Clawson Company, The. Oxygen pulping with recycled liquor. 4,248,662, Cl. 162-19.000.
Walsh, Peter, to Duro-Test Corporation. Incandescent lamp with infrared reflecting-visible energy transmitting coating and misaligned filament. 4,249,101, Cl. 313-112.000.
Walter, Ludwig: *See*—
Derleth, Helmut; Walter, Ludwig; Bretz, Karl-Heinrich; and Kurs, Artur, 4,248,847, Cl. 423-329.000.
Walters, Jay A., to Western Electric Company, Inc. Methods of assembling interconnect members with printed circuit boards. 4,247,981, Cl. 29-845.000.
Wamsley, Donald. Livestock feeding apparatus. 4,248,565, Cl. 414-518.000.
Wandel, Martin; Engelhard, Helmut; Gutschik, Ernst; Reichardt, Manfred; and Christoph, Geert, to Bayer Aktiengesellschaft. Fibre and filament mixtures containing high-shrinkage bifilar poly(mod)acrylic filaments or fibres modified with carbon black. 4,248,934, Cl. 428-374.000.
Wang, Hsin-Pang: *See*—
Thompson, Robert A.; and Wang, Hsin-Pang, 4,248,094, Cl. 73-760.000.
Wang, Kai. Manual knitting apparatus. 4,248,063, Cl. 66-4.000.
Wanger, Robert P.: *See*—
Spang, Henry A., III; and Wanger, Robert P., 4,249,238, Cl. 364-106.000.
Ware, Lyle A.; and Noerenberg, Marc D., to Med General, Inc. Low cost post-operative electrode. 4,248,247, Cl. 128-798.000.
Warmath, John: *See*—
Zuckerman, Jack M.; and Warmath, John, 4,248,363, Cl. 223-91.000.
Warmbold, Helmut, to Chrysler Corporation. Tamper resistant fuel filler restrictor assembly. 4,248,279, Cl. 141-348.000.
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Booth, Anthony R.; and Cartwright, Cyril A., 4,247,982, Cl. 30-41.000.
Warner, Richard B.: *See*—
Serban, Alexander; Warner, Richard B.; and Watson, Keith G., 4,248,618, Cl. 71-92.000.
Serban, Alexander; Watson, Keith G.; and Warner, Richard B., 4,248,619, Cl. 71-92.000.
Wasan, Darsh T.: *See*—
Gidaspow, Dimitri; Lee, Chang H.; and Wasan, Darsh T., 4,248,686, Cl. 204-184.000.
Washecheck, Paul H.; and Hale, Ron G., to Conoco, Inc. Single package additive for thermoplastic formulation. 4,248,747, Cl. 260-23.0XA.
Wasserman, Kurt J. Coupled toroidal solar collector. 4,248,209, Cl. 126-417.000.
Wasson, George E.: *See*—
Theodore, Frank W.; Wasson, George E.; Jasulaitis, William A.; and Gorin, Everett, 4,248,669, Cl. 201-6.000.
Watanabe, Ichiro; Satoh, Yoshiaki; and Takano, Takayuki, to Nitto Chemical Industry Co., Ltd. Process for producing acrylamide or methacrylamide utilizing microorganisms. 4,248,968, Cl. 435-129.000.
Watanabe, Koji: *See*—
Yuda, Takuo; Tanaka, Toshie; and Watanabe, Koji, 4,248,470, Cl. 294-87.200.
Watanabe, Risaburo; Ohtani, Masami; and Hashizume, Naoki, to Robert Bosch GmbH. Rotary fluid pressure biased vane compressor with pressure release means. 4,248,575, Cl. 418-93.000.
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Kamo, Seiichi; Watanabe, Tetzuo; and Nakayama, Kiyoshi, 4,248,617, Cl. 71-42.000.
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Ogata, Masaru; Watanabe, Yoshihachi; Matsumoto, Hiroshi; and Tawara, Katsuya, 4,248,869, Cl. 424-248.500.
Watkin, Theodore, to Perkin-Elmer Corporation, The. Projection mask storage and carrier system. 4,248,508, Cl. 353-114.000.
Watkins, James L. Photographic processing apparatus. 4,248,514, Cl. 354-299.000.
Watkins, Richard R.; Briggs, C. Steven; and Doyle, John M., Jr., to Honeywell Information Systems Inc. Row address linking control system for video display terminal. 4,249,172, Cl. 340-726.000.
Watley, Jerry O. Electrical outlet box. 4,249,035, Cl. 174-52.00R.

Watson, Charles A., to Lever Brothers Company. Dentifrices and their preparation. 4,248,860, Cl. 424-57.000.

Watson, Charles T.: *See—*
Aberle, Gary F.; Balm, Gerald J.; Berstis, Viktors; Gregg, Leon E.; Hu, Kuang-Chi; Ranweiler, James G.; Richardson, William C.; Schardt, Terry L.; and Watson, Charles T., 4,249,241, Cl. 364-200.000.

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Serban, Alexander; Warner, Richard B.; and Watson, Keith G., 4,248,618, Cl. 71-92.000.
Serban, Alexander; Watson, Keith G.; and Warner, Richard B., 4,248,619, Cl. 71-92.000.

Watson, Thomas E.; and Courtney, Watson L., to Westinghouse Electric Corp. Refrigeration system with load balancing control for at least three centrifugal compressors. 4,248,054, Cl. 62-175.000.

Watson, Thomas H.: *See—*
Roldness, David J.; Watson, Thomas H.; and Wonacott, Gary D., 4,248,557, Cl. 410-27.000.

Weather Control Shutters, Inc.: *See—*
Walker, C. Murchison, 4,248,022, Cl. 52-473.000.

Webb, John C.: *See—*
Romero-Sierra, Cesar; and Webb, John C., 4,248,734, Cl. 252-400.00R.

Weber, Ekkehard. Method for wet scrubbing gases with melts. 4,248,609, Cl. 55-89.000.

Weber, Fred H., to Fred H. Weber Co., Inc. Injection molded balata shell. 4,248,826, Cl. 264-328.140.

Weber, Heinrich; Dungs, Horst; Ferdinand, Fritz; Brasseur, Yves; and Birscheidt, Henri, to Carl Still GmbH & Co. KG, Firma; and Mecan Arbed S.A.R.L. Method and tank for producing hot briquettes. 4,248,603, Cl. 44-10.00J.

Weber, Helmut: *See—*
Bader, Leonhard; Giessner, Frank; Pechinger, Ernst; Rombach, Friedrich B.; Ruprich, Wilhelm; Weber, Helmut; and Winter, Hermann, 4,248,823, Cl. 264-156.000.

Wehinger, Egbert: *See—*
Bossert, Friedrich; Franckowiak, Gerhard; Heise, Arend; Kazda, Stanislav; Meyer, Horst; Stoepel, Kurt; Towart, Robertson; and Wehinger, Egbert, 4,248,873, Cl. 424-256.000.

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Weimann, Gunter: *See—*
Batz, Hans-Georg; Horn, Jurgen; Stellner, Klaus; Maier, Josef; Nelboeck-Hochstetter, Michael; and Weimann, Gunter, 4,248,786, Cl. 260-326.260.

Weinrich, Stanley C.: *See—*
Moore, Robert W., Jr.; and Weinrich, Stanley C., 4,248,219, Cl. 128-205.170.

Weiss, Mary L.: *See—*
Mommessin, Pierre R.; Castano, John R.; Rankin, John G.; and Weiss, Mary L., 4,248,599, Cl. 23-230.0HC.

Welch, Cletus N.; and Snodgrass, John O., to PPG Industries, Inc. Electrolysis of alkali metal chloride in a cell having a nickel-molybdenum cathode. 4,248,679, Cl. 204-98.000.

Welch, Melvin B.: *See—*
McDaniel, Max P.; and Welch, Melvin B., 4,248,735, Cl. 252-428.000.

Wells, Jerry S.: *See—*
Sykes, Richard B.; Wells, Jerry S.; and Liu, Wen-Chih, 4,249,008, Cl. 546-281.000.

Welsh, William C.; and Kailis, Peter G. Dispenser closure. 4,248,362, Cl. 222-505.000.

Wendel, Gunter: *See—*
Schminke, Heinz; Krebs, Rudolf; Wendel, Gunter; Schmidt, Hans-Jurgen; Desch, Willy; and Nitz, Jurgen, 4,248,610, Cl. 55-101.000.

Wendling, Larry A., to Minnesota Mining and Manufacturing Company. Poly(ethylenically unsaturated alkoxy) heterocyclic compounds. 4,249,011, Cl. 548-312.000.

Wenger, Roland, to Sandoz Ltd. Prostanoic ergolin-8-yl esters, thioesters, and amides. 4,249,001, Cl. 542-404.000.

Wenzel, Theo, to Hein, Lehmann AG. Side seal assembly for a screening machine. 4,248,701, Cl. 209-363.000.

Werbetronic AG: *See—*
Santoro, Giovanni, 4,248,101, Cl. 74-10.00R.

Werner, John W., to Brandon and Clark Electric Company, Inc. Load controller. 4,249,113, Cl. 318-39.000.

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Werts, Jean P. A. R. J.: *See—*
Bodart, Robert; and Werts, Jean P. A. R. J., 4,249,254, Cl. 375-117.000.

Wertz, William E., to Polymer Corporation, The. Coating powders with improved adhesion. 4,248,977, Cl. 525-58.000.

Wessman, Elbert F. T.: *See—*
Patyk, Fred; and Wessman, Elbert F. T., 4,248,145, Cl. 101-77.000.

West, James E., to Bell Telephone Laboratories, Incorporated. Technique for removing surface and volume charges from thin high polymer films. 4,248,808, Cl. 264-22.000.

Westberg, Walter M.; and Newes, Daniel J., to Minnesota Mining and Manufacturing Company. Grounding strap. 4,249,226, Cl. 361-223.000.

Westdale, Virgil W.; and Kumins, Charles A., to AM International, Inc. Electrostatic developer mix containing either MoS_2, TiS_2, WS_2 or graphite as lubricant. 4,248,950, Cl. 430-31.000.

Westdale, Virgil W.: *See—*
Datta, Pabitra; Westdale, Virgil W.; and Novotny, John, Jr., 4,248,954, Cl. 430-97.000.

Western Electric Company, Inc.: *See—*
Walters, Jay A., 4,247,981, Cl. 29-845.000.

Western Gear Corporation: *See—*
Hawley, Royal T.; Veale, John P.; and Odell, Jack L., II, 4,248,019, Cl. 51-45.000.

Westinghouse Electric Corp.: *See—*
Cham, Edward J.; and Stefanick, Ronald M., 4,249,170, Cl. 340-646.000.
Georgopoulos, George, 4,248,325, Cl. 181-284.000.
Golick, Leonard R., 4,247,974, Cl. 29-407.000.
Gronholm, Richard A., 4,249,097, Cl. 310-51.000.
Mandel, Alan F.; Capuano, Louis M.; Otto, Paul R.; and Eichler, Kenneth M., 4,248,327, Cl. 187-29.00R.
Shuey, Kenneth C.; Baker, Donal E.; and Doughman, Charles L., 4,249,223, Cl. 361-4.000.
Sisk, Francis J., 4,248,053, Cl. 62-158.000.
Watson, Thomas E.; and Courtney, Watson L., 4,248,054, Cl. 62-175.000.

Weston, Donald E.: *See—*
Votta, Gerald A.; and Weston, Donald E., 4,249,052, Cl. 200-147.00R.

Westvaco Corporation: *See—*
Gilbert, Earl F., 4,248,350, Cl. 206-586.000.
Repik, Albert J., 4,248,706, Cl. 210-673.000.

Wexler, Allan: *See—*
Ginsburg, David; Mayer, Wilfried J. W.; and Wexler, Allan, 4,249,018, Cl. 560-180.000.

Wheeler, Raymond L., to British Hovercraft Corporation Limited. Air cushion vehicle flexible skirts. 4,248,320, Cl. 180-128.000.

Whipple, Richard E.: *See—*
Mirzadeh, Saed; Whipple, Richard E.; Grant, Patrick M.; and O'Brien, Harold A., Jr., 4,248,730, Cl. 252-301.10R.

Whirlpool Corporation: *See—*
Roberts, Patrick S., 4,248,121, Cl. 84-1.190.

White, Alan C., to John Wyeth & Brother Ltd. Piperidine derivatives. 4,248,876, Cl. 424-267.000.

White, Elzie T., to Nashville Wire Products Manufacturing Co. Wire pocket display device. 4,248,352, Cl. 211-88.000.

White, James E.; and Shields, Santos, to Dresser Industries, Inc. Earth boring bit with textured bearing surface. 4,248,485, Cl. 308-8.200.

White, Willard C., to American Cyanamid Company. Disposable dust respirator. 4,248,220, Cl. 128-206.190.

White, William R., to Occidental Research Corporation. Flotation separation of glass from a mixture of comminuted inorganic materials. 4,248,696, Cl. 209-1.000.

White's Electronics, Inc.: *See—*
Karbowski, James P., 4,249,128, Cl. 324-329.000.

Whitley, George J., to RCA Corporation. Method of forming aperture with rounded edges in sheet material. 4,248,075, Cl. 72-335.000.

Whitney, John M., to Honeywell Inc. Clock thermostat apparatus having means for reducing the setback temperature when the normal temperature selection is turned down. 4,248,375, Cl. 236-46.00R.

Whittaker, Arthur G., to Aerospace Corporation, The. Chaoite coating process. 4,248,909, Cl. 427-162.000.

Wichkoski, Dennis A.: *See—*
Silberman, Raphael J.; Tilton, Frederick T.; Smith, Everett H.; and Wichkoski, Dennis A., 4,248,307, Cl. 166-315.000.

Widlar, Robert J., to National Semiconductor Corporation. Temperature compensated bandgap IC voltage references. 4,249,122, Cl. 323-313.000.

Wilde, Geoffrey L.; Taylor, Maurice I.; and Medland, Geoffrey P., to Rolls-Royce Limited. Gas turbine engine power plant. 4,248,041, Cl. 60-226.00R.

Wilhelmy, Whitney. Cantilever two piece ski. 4,248,449, Cl. 280-603.000.

Wilkinson Sword Limited: *See—*
Rowsell, David G.; Spring, David J.; and Hems, Roger, 4,248,859, Cl. 424-54.000.

Williames, Geoffrey A. Seedling containers. 4,248,014, Cl. 47-86.000.

Williams, Charles E., to Grow Group, Inc. Method of bonding utilizing brominated rubber compositions as adhesives. 4,248,937, Cl. 428-414.000.

Williams, Charles R., to Monsanto Company. Composition and method for sizing textiles. 4,248,755, Cl. 260-29.6TA.

Williams, Charles S.; and Gerber, Jacobus J., to Triomf Fertilizer (Proprietary) Ltd. Treatment of phosphoric acid. 4,248,843, Cl. 423-321.00R.

Williams, Haydn W. R.: *See—*
Cragoe, Edward J., Jr.; Williams, Haydn W. R.; and Woltersdorf, Otto W., Jr., 4,249,021, Cl. 562-462.000.

Williams, John A.: *See—*
Batey, William; Mills, Alfred L.; and Williams, John A., 4,248,836, Cl. 423-4.000.

Williams, John K.: *See—*
Morgan, Adrian J.; Williams, John K.; and Else, Ronald, 4,249,043, Cl. 179-111.00E.

Williams, Ralph A.: *See—*
Masar, Edward J.; Oberg, David J.; and Williams, Ralph A., 4,248,744, Cl. 260-17.4SG.

Willing, David N., to Dow Corning Corporation. Process for producing a silicone elastomer emulsion and use thereof. 4,248,751, Cl. 260-29.20M.

Willson, Allan C. Wood burning stove. 4,248,203, Cl. 126-77.000.

Wilson, Harry L.; and Shultz, David E., to Cummins Engine Company, Inc. Hydraulic attenuator for air fuel control pump. 4,248,188, Cl. 123-382.000.

Wilson, Jack: *See—*
Brown, David C.; and Wilson, Jack, 4,249,141, Cl. 331-94.50F.

Wilson, Kenneth J.; and Rosene, Ronald G., to Wilson Tool Company. Punch guide assembly. 4,248,111, Cl. 83-140.000.

Wilson, Lester E.: *See—*
Eby, Richard L.; and Wilson, Lester E., 4,248,942, Cl. 429-93.000.

Wilson, Marlin V.; Nickell, Larry C.; and McCormack, John L., to Appalachian Electronic Instruments, Inc. Shed sensing stop motion system for high speed looms. 4,248,272, Cl. 139-353.000.

Wilson, Martin, to United States Borax & Chemical Corporation. Purification of flotation tailings water. 4,248,708, Cl. 210-727.000.

Wilson Tool Company: *See—*
Wilson, Kenneth J.; and Rosene, Ronald G., 4,248,111, Cl. 83-140.000.

Wilwerding, Dennis J.: *See—*
Stauffer, Norman L.; and Wilwerding, Dennis J., 4,249,073, Cl. 250-204.000.

Winkler, Manfred: *See—*
Kallies, Karl-Heinz; and Winkler, Manfred, 4,248,830, Cl. 422-59.000.

Winnard, Ronald, to Latex Products (Proprietary) Limited. Endobronchial tubes. 4,248,221, Cl. 128-207.150.

Winter, Hermann: *See—*
Bader, Leonhard; Giessner, Frank; Pechinger, Ernst; Rombach, Friedrich B.; Ruprich, Wilhelm; Weber, Helmut; and Winter, Hermann, 4,248,823, Cl. 264-156.000.

Wisconsin Alumni Research Foundation: *See—*
DeLuca, Hector F.; Tanaka, Yoko; Ikekawa, Nobuo; and Kobayashi, Yoshiro, 4,248,791, Cl. 260-397.200.

Wise, Raleigh W.: *See—*
Sullivan, Alfred B.; and Wise, Raleigh W., 4,248,805, Cl. 260-780.000.

Witco Chemical Corporation: *See—*
Satterly, Kenneth P., 4,248,975, Cl. 521-110.000.

Wittmann, Erwin J.: *See—*
Harwood, Leopold A.; and Wittmann, Erwin J., 4,249,199, Cl. 358-19.000.

Wixon, Harold E., to Colgate-Palmolive Company. Concentrated heavy duty particulate laundry detergent. 4,248,911, Cl. 427-214.000.

Woldy, Paul N.; Kaufman, Harold C.; Dach, Michael M.; and Beall, James F., to Texaco Inc. Gasification process. 4,248,604, Cl. 48-197.00R.

Wolfe, Robert W., to GTE Products Corporation. LaMg Aluminate phosphors activated by europium and lamps incorporating same. 4,249,108, Cl. 313-486.000.

Wolford, James J.; and George, John B., to RCA Corporation. Short-term power dropout arrangement useful in a television receiver. 4,249,089, Cl. 307-140.000.

Wolfrum, Gerhard: *See—*
Hugl, Herbert; and Wolfrum, Gerhard, 4,248,774, Cl. 260-165.000.

Woltersdorf, Otto W., Jr.: *See—*
Cragoe, Edward J., Jr.; Williams, Haydn W. R.; and Woltersdorf, Otto W., Jr., 4,249,021, Cl. 562-462.000.

Womack, Robert R., to Womack, Robert R.; Jones, Stanley M.; and Shanks, W., Jr. Stellate solar collector. 4,248,211, Cl. 126-446.000.

Wonacott, Gary D.: *See—*
Roldness, David J.; Watson, Thomas H.; and Wonacott, Gary D., 4,248,557, Cl. 410-27.000.

Woo, Roseanne M.: *See—*
Carlin, William W.; Darlington, William B.; DuBois, Donald W.; and Woo, Roseanne M., 4,248,680, Cl. 204-98.000.

Wood, David B., III, to Xomox Corporation. Method of and means for providing a cam-actuated, spring-return mechanism wherein the torque output is a function of the cam profile. 4,248,104, Cl. 74-569.000.

Woodilla, Marvin F. Apparatus for wave power generation utilizing large mass dynamic energy absorption. 4,248,044, Cl. 60-398.000.

Woods, Quentin T.; and Gerverdinck, William D., to FMC Corporation. Bagging apparatus. 4,248,032, Cl. 53-570.000.

Worden, Donald G., to Stainless Steel Fabricating, Inc. Cheese molding process and apparatus therefor. 4,248,578, Cl. 425-220.000.

Workman, Jack L.: *See—*
Murray, Coyt E.; and Workman, Jack L., 4,248,460, Cl. 285-363.000.

Wormley, David N.: *See—*
Drutchas, Gilbert H.; and Wormley, David N., 4,248,194, Cl. 123-357.000.

Worthington, Edward J., Jr.: *See—*
Fischer, David J.; Narske, Richard M.; Thomas, John C.; and Worthington, Edward J., Jr., 4,248,972, Cl. 435-292.000.

Wright Line Inc.: *See—*
Latino, Richard M., 4,247,999, Cl. 40-359.000.

Wright, Michael R.: *See—*
Pernicano, Vincent S.; and Wright, Michael R., 4,248,500, Cl. 350-98.000.

Wright, Roy F., to Phillips Petroleum Company. Crosslinked EPDM/-thermoplastic elastomer blend. 4,248,758, Cl. 260-33.6AQ.

Wudl, Fred: *See—*
Haddon, Robert C.; Kaplan, Martin L.; and Wudl, Fred, 4,249,013, Cl. 549-35.000.

WUPA Maschinenfabrik GmbH: *See—*
Schroter, Friedrich, 4,248,370, Cl. 225-97.000.

Wurlitzer Company, The: *See—*
Klaiber, George S.; Grajek, Stanley A.; and Hill, Robert S., 4,248,124, Cl. 84-192.000.

Wuthrich, Paul, to Timex Corporation. Gear train for timepiece with a stepping motor. 4,249,251, Cl. 368-76.000.

Wyoming Mineral Corporation: *See—*
Camp, Floyd E.; and Stana, Regis R., 4,248,703, Cl. 210-676.000.

Xenex Corporation: *See—*
Zettler, John F.; and Twyman, Harold F., 4,249,074, Cl. 250-221.000.

Xerox Corporation: *See—*
Burnham, Robert D.; and Scifres, Donald R., 4,249,142, Cl. 331-94.50H.
Fox, John, 4,248,413, Cl. 270-53.000.
Sahay, Ravi B., 4,248,528, Cl. 355-14.00R.
Urso, Charles J., 4,248,519, Cl. 355-3.0CH.

Xomox Corporation: *See—*
Wood, David B., III, 4,248,104, Cl. 74-569.000.

Xplo Corporation: *See—*
Charpentier, John J., 4,248,303, Cl. 166-299.000.

Xycom, Inc.: *See—*
Barnich, Richard G., 4,249,240, Cl. 364-200.000.

Yaffe, Roberta, to Texaco Inc. Synthetic aircraft turbine oil. 4,248,721, Cl. 252-46.700.

Yaguchi, Shoji, to General Corporation, The. Air conditioner. 4,248,057, Cl. 62-280.000.

Yajima, Seishi; Okamura, Kiyohito; and Shishido, Toetsu, to Foundation: The Research Institute for Special Inorganic Materials, The. Process for producing ceramic sintered bodies. 4,248,814, Cl. 264-63.000.

Yamada, Kinsaku, to Hitachi, Ltd. Exhaust gas recirculation control system. 4,248,186, Cl. 123-568.000.

Yamada, Shigeru, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument providing chord tones in just intonation. 4,248,119, Cl. 84-1.010.

Yamagiwa, Akira, to Hitachi, Ltd. Logic circuit. 4,249,091, Cl. 307-203.000.

Yamaguchi, Akihiro; Kobayashi, Tadashi; Yamaguchi, Keisaburo; and Murakami, Hisamichi, to Mitsui Toatsu Chemicals, Incorporated. Process for the preparation of 2,2'-bis[4-(1,1,3,3-tetramethylbutyl)-phenol]sulfide. 4,248,804, Cl. 568-47.000.

Yamaguchi, Hiromichi: *See—*
Fujii, Yozo; and Yamaguchi, Hiromichi, 4,248,794, Cl. 564-133.000.

Yamaguchi, Keisaburo: *See—*
Yamaguchi, Akihiro; Kobayashi, Tadashi; Yamaguchi, Keisaburo; and Murakami, Hisamichi, 4,248,804, Cl. 568-47.000.

Yamamatsu, Setsuo: *See—*
Tamura, Nobuhiro; Fukuoka, Yohei; Yamamatsu, Setsuo; Suzuki, Yoshio; Mitsui, Ryoichi; and Ibuki, Tadayuki, 4,249,019, Cl. 560-208.000.

Yamamoto, Hirotoshi: *See—*
Hozumi, Keiichi; Nishikaichi, Yuji; Ueda, Masao; Miura, Tatsuya; and Yamamoto, Hirotoshi, 4,249,062, Cl. 219-124.340.

Yamamoto, Kaname: *See—*
Tajima, Eiichi; Yamamoto, Kaname; and Saito, Takeshi, 4,248,926, Cl. 428-253.000.

Yamamoto, Osamu: *See—*
Takenaga, Mutsuo; Yamamoto, Osamu; and Yamashita, Tadaoki, 4,248,731, Cl. 252-301.40R.

Yamanaka, Seisuke, to Sony Corporation. Solid state television camera. 4,249,203, Cl. 358-50.000.

Yamashita, Tadaoki: *See—*
Takenaga, Mutsuo; Yamamoto, Osamu; and Yamashita, Tadaoki, 4,248,731, Cl. 252-301.40R.

Yanabu, Osamu: *See—*
Uchida, Hiromu; and Yanabu, Osamu, 4,248,676, Cl. 204-56.00R.

Yang, Michael W.: *See—*
Hein, Paul R.; Yang, Michael W.; Irvin, Robert A.; Bauer, Steven E.; and Orem, Roland L., 4,248,960, Cl. 430-306.000.

Yarborough, Lyman: *See—*
Sharp, Shelby P.; and Yarborough, Lyman, 4,248,717, Cl. 252-8.55B.

Yasumatsu, Jun: *See—*
Motonami, Masanao; Yasumatsu, Jun; and Kubota, Tatsushi, 4,248,456, Cl. 280-802.000.

Yasutake, Katsuya; and Morita, Akiyoshi, to Victor Company of Japan, Ltd. Capstan servo system in a recording and/or reproducing apparatus. 4,249,220, Cl. 360-73.000.

Yates, Stephen W.: *See—*
Martin, Charles R.; Tarbox, Philip B.; and Yates, Stephen W., 4,248,037, Cl. 57-263.000.

Yen, Kuo-Hsiung; Lau, Kei-Fung; and Kagiwada, Reynold S., to TRW Inc. Surface acoustic wave resonators utilizing harmonic frequencies. 4,249,146, Cl. 333-195.000.

Yokogawa Electric Works, Ltd.: *See—*
Sawayama, Takehiro; Ito, Ichizo; Aga, Toshio; and Ando, Tetsuo, 4,248,098, Cl. 73-861.240.

Yokota, Tsuyoshi: *See—*
Yomogida, Toshihiko; and Yokota, Tsuyoshi, 4,249,248, Cl. 364-900.000.

Yokozawa, Minori: *See—*
Kamegaya, Takeo; Matsuzaki, Hideomi; Kaneko, Ryuichi; and Yokozawa, Minori, 4,249,105, Cl. 313-213.000.

Yomogida, Toshihiko; and Yokota, Tsuyoshi, to Toyoda-Koki Kabushiki-Kaisha. Programmable sequence controller with an arithmetic operation function. 4,249,248, Cl. 364-900.000.

Yomota, Junji; Kurashina, Fumiaki; Kamiide, Mareyasu; and Takita, Ichiro. Method for preparing a magnesia carbon brick. 4,248,638, Cl. 106-56.000.

Yoshida, Masahide, to Olympus Optical Co., Ltd. Tape cassette. 4,248,344, Cl. 206-387.000.

Yoshida, Tadao: *See*—
Suzuki, Tadao; and Yoshida, Tadao, 4,249,136, Cl. 330-251.000.

Yoshida, Tetsu; and Morimoto, Isao, to Toshiba Kikai Kabushiki Kaisha. Automatic operating systems of machine tools and method. 4,249,243, Cl. 364-474.000.

Yoshikawa, Kazuo: *See*—
Shinoda, Tsutae; Yoshikawa, Kazuo; and Andoh, Shizuo, 4,249,104, Cl. 313-188.000.

Yoshimura, Tatsushiro; and Tominaga, Shigetake, to Daikin Kogyo Co., Ltd. Fluorine-containing resin composition having improved thermal stability. 4,248,763, Cl. 260-42.220.

Yoshinari, Takashi: *See*—
Tsutsui, Mitsukuni; Yoshinari, Takashi; Iikubo, Toshiaki; Kawakami, Kazuhiko; and Sugiura, Noboru, 4,248,201, Cl. 123-647.000.

Yoshino, Hirokazu: *See*—
Baba, Takaaki; Kitani, Teruo; Nakazawa, Masao; Yoshino, Hirokazu; Fujita, Tatsuo; and Tsuboka, Eiichi, 4,249,211, Cl. 358-183.000.

Yoshioka, Yoshio: *See*—
Minami, Isao; Yoshioka, Yoshio; and Nomura, Hiroaki, 4,249,006, Cl. 544-313.000.

Yoshizumi, Akira; Ikeya, Hirotoshi; and Wada, Moriyasu, to Tokyo Shibaura Denki Kabushiki Kaisha. Resin-sealed semiconductor device. 4,248,920, Cl. 428-76.000.

Yosida, Sizuo: *See*—
Kato, Yasuhiro; Sekiguchi, Nobuo; and Yosida, Sizuo, 4,249,227, Cl. 361-334.000.

Young, Ray A.: *See*—
Butler, Kim D.; Young, Ray A.; and Brown, Alfred L., 4,248,348, Cl. 206-447.000.

Youngouist, Robert J.: *See*—
Davis, Donald E.; and Youngouist, Robert J., 4,249,218, Cl. 360-13.000.

Youssef, Kamal A. Instant culture media and method of sterilizing same. 4,248,971, Cl. 435-253.000.

Yuda, Takuo; Tanaka, Toshie; and Watanabe, Koji, to Nifco Inc. Bottle carrier. 4,248,470, Cl. 294-87.200.

Yunan, Malak E., to Du Pont de Nemours, E. I., and Company. Field-connected explosive booster for propagating a detonation in connected detonating cord assemblies containing low-energy detonating cord. 4,248,152, Cl. 102-27.00F.

Zahariev, Georgi Z.: *See*—
Simeonov, Yordan T.; Cheshkov, Valeri M.; and Zahariev, Georgi Z., 4,248,760, Cl. 260-39.0SB.

Zamikhovsky, Alexander: *See*—
Masch, Vladimir; and Zamikhovsky, Alexander, 4,247,961, Cl. 5-442.000.

Zanteson, Leland A.: *See*—
Darakjy, David L.; and Zanteson, Leland A., 4,249,033, Cl. 174-16.00R.

Zeman, Leos J.: *See*—
Jakabhazy, Stephen Z.; and Zeman, Leos J., 4,248,913, Cl. 427-244.000.

Zemke, Edward H.: *See*—
Erikson, Rolf B.; Zemke, Edward H.; and Guenther, Kenneth L., 4,249,187, Cl. 346-75.000.

Zenner, Walter J. Control system for dot matrix line printer using one print element per character. 4,248,147, Cl. 101-93.050.

Zettler, John F.; and Twyman, Harold F., to Xenex Corporation. Intrusion detector for press brake. 4,249,074, Cl. 250-221.000.

Zielinski, Czeslawa: *See*—
Zielinski, Zenon A.; and Zielinski, Czeslawa, 4,248,020, Cl. 52-185.000.

Zielinski, Zenon A.; and Zielinski, Czeslawa, to Canadian Patents & Development Ltd. Prefabricated stairway module. 4,248,020, Cl. 52-185.000.

Zildjian, Robert, to Avedis Zildjian Company. Hi Hat cymbal. 4,248,129, Cl. 84-422.00R.

Zimmer, Karl E., to Pohlig-Heckel-Bleichert Vereinigte Maschinenfabriken. Equipment for handling bulk material. 4,248,337, Cl. 198-301.000.

Zimmerman, Franz X.: *See*—
Smith, Charles W., Jr.; and Zimmerman, Franz X., 4,249,032, Cl. 13-25.000.

Zimmerman, Jack A., to ACF Industries, Incorporated. End cap arrangement utilizing large headed bolts and single end wall stop. 4,248,551, Cl. 406-129.000.

Zizine, Jean L., to S.C.I. Le Brin. Device for measuring the mass flow or flow rate of an insulating liquid. 4,248,086, Cl. 73-861.090.

Zoecon Corporation: *See*—
Henrick, Clive A., 4,248,875, Cl. 424-263.000.

Zuckerman, Jack M.; and Warmath, John, to Cut Rate Plastic Hangers, Inc. Garment hanger. 4,248,363, Cl. 223-91.000.

Zwicker, Roger D., to Victor Equipment Company. Cutting torch having integral head mixer. 4,248,384, Cl. 239-419.300.

379235 Ontario Ltd.: *See*—
Beacham, William H., 4,248,056, Cl. 62-238.00E.
Beacham, William H., 4,248,292, Cl. 165-50.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 3RD DAY OF FEBRUARY, 1981

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Almeida, Manuel J. Universal knee orthosis. Re. 30,501, Cl. 128-80.00C.

Beckman Instruments, Inc.: *See*—
Lencioni, Cecil C., Jr., Re. 30,502, Cl. 128-2.10B.

Clairol Incorporated: *See*—
Springer, William E.; Tuohy, John P.; and Walter, Henry J., Re. 30,500, Cl. 128-57.000.

Dunham-Bush, Inc.: *See*—
Moody, Harold W., Jr.; and Hamilton, Clark B., Re. 30,499, Cl. 62-117.000.

General Electric Company: *See*—
Lee, Minyoung; and Szala, Lawrence E., Re. 30,503, Cl. 51-307.000.

Hamilton, Clark B.: *See*—
Moody, Harold W., Jr.; and Hamilton, Clark B., Re. 30,499, Cl. 62-117.000.

Jacob, Adir, to LFE Corporation. Process and material for manufacturing semiconductor devices. Re. 30,505, Cl. 156-643.000.

Jordan, John F.; and Lampkin, Curtis M., to Photon Power, Inc. Photovoltaic cell. Re. 30,504, Cl. 136-258.000.

Lampkin, Curtis M.: *See*—
Jordan, John F.; and Lampkin, Curtis M., Re. 30,504, Cl. 136-258.000.

Lee, Minyoung; and Szala, Lawrence E., to General Electric Company. Composite of bonded cubic boron nitride crystals on a silicon carbide substrate. Re. 30,503, Cl. 51-307.000.

Lencioni, Cecil C., Jr., to Beckman Instruments, Inc. Open lead testing system for EEG. Re. 30,502, Cl. 128-2.10B.

LFE Corporation: *See*—
Jacob, Adir, Re. 30,505, Cl. 156-643.000.

Moody, Harold W., Jr.; and Hamilton, Clark B., to Dunham-Bush, Inc. Injection cooling of screw compressors. Re. 30,499, Cl. 62-117.000.

Nakata, Hozumi, to Nihon Dempa Kogyo Co., Ltd. Tuning fork-type quartz crystal oscillator and method for stabilizing the vibration frequency thereof. Re. 30,506, Cl. 310-312.000.

Nihon Dempa Kogyo Co., Ltd.: *See*—
Nakata, Hozumi, Re. 30,506, Cl. 310-312.000.

Photon Power, Inc.: *See*—
Jordan, John F.; and Lampkin, Curtis M., Re. 30,504, Cl. 136-258.000.

Springer, William E.; Tuohy, John P.; and Walter, Henry J., to Clairol Incorporated. Massage device. Re. 30,500, Cl. 128-57.000.

Szala, Lawrence E.: *See*—
Lee, Minyoung; and Szala, Lawrence E., Re. 30,503, Cl. 51-307.000.

Tuohy, John P.: *See*—
Springer, William E.; Tuohy, John P.; and Walter, Henry J., Re. 30,500, Cl. 128-57.000.

Walter, Henry J.: *See*—
Springer, William E.; Tuohy, John P.; and Walter, Henry J., Re. 30,500, Cl. 128-57.000.

LIST OF DESIGN PATENTEES

Ahn, Chong T. Music box. 258,135, 2-3-81, Cl. D17-24.000.

Alleghany Pharmacal Corp.: *See*—
Mathews, Larry, 258,155, Cl. D59-2.00R.

American Can Company: *See*—
Elchook, Frank, Jr.; and Schulz, Galyn A., 258,154, Cl. D59-2.00C.

American Tourister, Inc.: *See*—
Koffler, Sol, 258,113, Cl. D8-301.000.

Andrus, Cowles, Jr. Caster for amphibious use. 258,116, 2-3-81, Cl. D8-375.000.

Bailey, Kenneth. Football trophy. 258,125, 2-3-81, Cl. D11-157.000.

Baker, Bertrand M. Table. 258,103, 2-3-81, Cl. D6-146.000.

Baker, Bertrand M. Tea table. 258,104, 2-3-81, Cl. D6-146.000.

Baker, Bertrand M. Side table. 258,105, 2-3-81, Cl. D6-146.000.

Baker, Dennis O. Automobile running board. 258,128, 2-3-81, Cl. D12-203.000.

Bardeau, William M. Twin kettle and support therefor. 258,133, 2-3-81, Cl. D15-98.000.

Barfod, Bent. Adjustable crutch. 258,096, 2-3-81, Cl. D3-8.000.

Bartch, Larry G. Stuffed animal. 258,167, 2-3-81, Cl. D21-157.000.

Barthropp, Francis M. L., to Barton of Canada Ltd. Toy water gun. 258,166, 2-3-81, Cl. D21-147.000.

Barton of Canada Ltd.: *See*—
Barthropp, Francis M. L., 258,166, Cl. D21-147.000.

Bashour, Joseph E. Bottle. 258,117, 2-3-81, Cl. D9-403.000.

Beatrice Foods Co.: *See*—
Brown, James B.; and Garrison, Dale, 258,137, Cl. D22-19.000.

Behlert, Austin F. Right and left-hand pistol safety lock set. 258,139, 2-3-81, Cl. D22-99.000.

Blowers, Dorothy L., to Pacific Furniture Manufacturing Co. Design for an armchair. 258,100, 2-3-81, Cl. D6-26.000.

Bobbish, George. Combined cigar and cigarette holder, extinguisher and ash tray. 258,149, 2-3-81, Cl. D27-27.000.

Bristol-Myers Company: *See*—
du Cret, Doris, 258,119, Cl. D9-457.000.

Brown, James B.; and Garrison, Dale, to Beatrice Foods Co. Insect trap. 258,137, 2-3-81, Cl. D22-19.000.

Bunke, Bernard F. Flying saucer toy. 258,158, 2-3-81, Cl. D21-86.000.

Burdock, Patrick T. A., to Rovex Limited. Toy locomotive. 258,164, 2-3-81, Cl. D21-129.000.

Burdock, Patrick T. A., to Rovex Limited. Toy tractor. 258,165, 2-3-81, Cl. D21-132.000.

Caldwell, John W., to Pacific Furniture Manufacturing Co. Design for an armchair. 258,101, 2-3-81, Cl. D6-26.000.

Caputo, Leonard R.: *See*—
Kallet, Eli A.; Cravitt, Samuel; and Caputo, Leonard R., 258,144, Cl. D24-17.000.

Christen Incorporated: *See*—
Christen, Louis J., Jr., 258,111, Cl. D7-184.000.

Christen, Louis J., Jr., to Christen Incorporated. Scraper. 258,111, 2-3-81, Cl. D7-184.000.

Clairol Incorporated: *See*—
Wistrand, John, 258,097, Cl. D3-39.000.

Cleveland, Donald B. Emergency portable incubator. 258,142, 2-3-81, Cl. D24-9.000.

Cone, Charles W. Portable cooking grill. 258,108, 2-3-81, Cl. D7-110.000.

Corning Glass Works: *See*—
Potts, Robert S., 258,145, Cl. D24-32.000.
Potts, Robert S., 258,146, Cl. D24-32.000.

Cravitt, Samuel: *See*—
Kallet, Eli A.; Cravitt, Samuel; and Caputo, Leonard R., 258,144, Cl. D24-17.000.

D'Aguanno, Steven R.: *See*—
Orenstein, Henry; Decker, George; Schlau, Floyd E.; Patterson, Maureen; Santaw, Peter M.; and D'Aguanno, Steven R., 258,162, Cl. D21-121.000.
Orenstein, Henry; Decker, George; Schlau, Floyd E.; Patterson, Maureen; Santaw, Peter M.; and D'Aguanno, Steven R., 258,163, Cl. D21-122.000.

Decker, George: *See*—
Orenstein, Henry; Decker, George; Schlau, Floyd E.; Patterson, Maureen; Santaw, Peter M.; and D'Aguanno, Steven R., 258,162, Cl. D21-121.000.
Orenstein, Henry; Decker, George; Schlau, Floyd E.; Patterson, Maureen; Santaw, Peter M.; and D'Aguanno, Steven R., 258,163, Cl. D21-122.000.

Dewees, John G.: *See*—
Franklin, Robert P.; and Dewees, John G., 258,099, Cl. D6-24.000.

Doherty, Glenn F.; and Fossella, Gregory, to Epicure Products, Inc. Loudspeaker housing assembly. 258,130, 2-3-81, Cl. D14-33.000.

du Cret, Doris, to Bristol-Myers Company. Display card. 258,119, 2-3-81, Cl. D9-457.000.

Dyson, Evelyna C., to Revlon, Inc. Caliper. 258,121, 2-3-81, Cl. D10-73.000.

Elchook, Frank, Jr.; and Schulz, Galyn A., to American Can Company. Embossed bathroom tissue sheet. 258,154, 2-3-81, Cl. D59-2.00C.

Elliott, William N. Hairspray mask. 258,150, 2-3-81, Cl. D28-9.000.

Epicure Products, Inc.: *See*—
Doherty, Glenn F.; and Fossella, Gregory, 258,130, Cl. D14-33.000.

Farrand Optical Co., Inc.: *See*—
Kallet, Eli A.; Cravitt, Samuel; and Caputo, Leonard R., 258,144, Cl. D24-17.000.

Flick, Kenneth E. Gum massaging instrument. 258,143, 2-3-81, Cl. D24-10.000.

Fossella, Gregory: *See*—
Doherty, Glenn F.; and Fossella, Gregory, 258,130, Cl. D14-33.000.

Franklin, Robert P.; and Dewees, John G., to Trans-World Manufacturing Corp. Eyeglass display case. 258,099, 2-3-81, Cl. D6-24.000.

Fukumoto, Noboru; and Inoue, Shyusuke, to Matsushita Electric Industrial Co., Ltd. Food processor. 258,109, 2-3-81, Cl. D7-153.000.

Garrison, Dale: *See*—
Brown, James B.; and Garrison, Dale, 258,137, Cl. D22-19.000.

Genaro, Donald M.; and Sylvester, Gordon, to Teletype Corporation. Teleprinter cabinet. 258,131, 2-3-81, Cl. D14-93.000.

Grill, Benjamin: *See*—
Sturman, Oded E.; and Grill, Benjamin, 258,140, Cl. D23-38.000.

Gruber, Martin. Ring. 258,123, 2-3-81, Cl. D11-34.000.

Hasbro Industries, Inc.: *See*—
Orenstein, Henry; Decker, George; Schlau, Floyd E.; Patterson, Maureen; Santaw, Peter M.; and D'Aguanno, Steven R., 258,162, Cl. D21-121.000.
Orenstein, Henry; Decker, George; Schlau, Floyd E.; Patterson, Maureen; Santaw, Peter M.; and D'Aguanno, Steven R., 258,163, Cl. D21-122.000.

Horikoshi, Tatsuo, to Yamaha Hatsudoki Kabushiki Kaisha. Wheel for motorcycle. 258,129, 2-3-81, Cl. D12-205.000.

Hydronic Systems, Inc.: *See*—
Sturman, Oded E.; and Grill, Benjamin, 258,140, Cl. D23-38.000.

Inoue, Shyusuke: *See*—
Fukumoto, Noboru; and Inoue, Shyusuke, 258,109, Cl. D7-153.000.

J & W Scientific, Incorporated: *See*—
Jennings, Walter G.; Wohleb, Robert H.; and Wohlers, Norman W., 258,147, Cl. D24-56.000.

Jeffries, Richard. Bingo game card. 258,156, 2-3-81, Cl. D21-25.000.

Jennings, Walter G.; Wohleb, Robert H.; and Wohlers, Norman W., to J & W Scientific, Incorporated. High pressure soxhlet extractor. 258,147, 2-3-81, Cl. D24-56.000.

Johnson & Johnson: *See*—
Williams, D. Michael; and Simpson, Danny E., 258,160, Cl. D21-114.000.

Kallet, Eli A.; Cravitt, Samuel; and Caputo, Leonard R., to Farrand Optical Co., Inc. Optical cuvette insert for use with differential spectrofluorometer and absorption meter. 258,144, 2-3-81, Cl. D24-17.000.

Kamata, Eitaro, to Shoei Safety Helmet Corporation. Motorcycle fairing. 258,127, 2-3-81, Cl. D12-182.000.

Klapp, Gregory G. Plug cutter. 258,112, 2-3-81, Cl. D8-7.000.

Klawitter, Ronald R., to Steven Manufacturing Company. Toy circular saw. 258,161, 2-3-81, Cl. D21-120.000.

Koffler, Sol, to American Tourister, Inc. Combined handle stud and ring. 258,113, 2-3-81, Cl. D8-301.000.

Lachemann, William C. Baseball glove. 258,095, 2-3-81, Cl. D2-361.000.

Lamberth, Eugene. Tongs for cleaning gutters and the like. 258,110, 2-3-81, Cl. D7-161.000.

Levy, Michael L., to Trewax Company. Carpet cleaning machine. 258,132, 2-3-81, Cl. D15-52.000.

Loix, Gilbert. Foldable ladder. 258,148, 2-3-81, Cl. D25-64.000.

Lukes, John R. Skateboard. 258,169, 2-3-81, Cl. D21-227.000.

MacDougall, Alexander S. O. Golf club grip. 258,168, 2-3-81, Cl. D21-222.000.

Magoon, William A. Slingshot. 258,136, 2-3-81, Cl. D22-4.000.

Mathews, Larry, to Alleghany Pharmacal Corp. Sheet of hair removing strips. 258,155, 2-3-81, Cl. D59-2.00R.

Matsushita Electric Industrial Co., Ltd.: *See*—
Fukumoto, Noboru; and Inoue, Shyusuke, 258,109, Cl. D7-153.000.

Maynor, Morris, Jr. Device for maintaining delivery of gasoline pump nozzle. 258,114, 2-3-81, Cl. D8-349.000.

Muramatsu, Keizo. Wrist watch. 258,120, 2-3-81, Cl. D10-39.000.

Nakagawa, Francis Y. Back scrubber. 258,151, 2-3-81, Cl. D28-63.000.

Norinsky, Sidney. Convertible saddle tote bag. 258,098, 2-3-81, Cl D3-71.000.

O'Meara, Maurice. Hoop roller. 258,159, 2-3-81, Cl. D21-101.000.

Orenstein, Henry; Decker, George; Schlau, Floyd E.; Patterson, Maureen; Santaw, Peter M.; and D'Aguanno, Steven R., to Hasbro Industries, Inc. Toy sink. 258,162, 2-3-81, Cl. D21-121.000.

Orenstein, Henry; Decker, George; Schlau, Floyd E.; Patterson, Maureen; Santaw, Peter M.; and D'Aguanno, Steven R., to Hasbro Industries, Inc. Toy stove. 258,163, 2-3-81, Cl. D21-122.000.

Pacific Furniture Manufacturing Co.: *See*—
Blowers, Dorothy L., 258,100, Cl. D6-26.000.
Caldwell, John W., 258,101, Cl. D6-26.000.

Patterson, Maureen: *See*—
Orenstein, Henry; Decker, George; Schlau, Floyd E.; Patterson, Maureen; Santaw, Peter M.; and D'Aguanno, Steven R., 258,162, Cl. D21-121.000.
Orenstein, Henry; Decker, George; Schlau, Floyd E.; Patterson, Maureen; Santaw, Peter M.; and D'Aguanno, Steven R., 258,163, Cl. D21-122.000.

Piatek, Ronald H. Swivel mount for punching bags. 258,115, 2-3-81, Cl. D8-373.000.

Pitney Bowes Inc.: *See*—
Sinn, Hans J., 258,122, Cl. D10-91.000.

Porteous, Don D. Dental material dispenser. 258,118, 2-3-81, Cl. D9-348.000.

Potts, Robert S., to Corning Glass Works. Stackable laboratory rack or the like. 258,145, 2-3-81, Cl. D24-32.000.

Potts, Robert S., to Corning Glass Works. Tray structure or the like for use in conjunction with a laboratory rack. 258,146, 2-3-81, Cl. D24-32.000.

Raines, Richard K., Jr. Pendant. 258,124, 2-3-81, Cl. D11-85.000.

Revlon, Inc.: *See*—
Dyson, Evelyna C., 258,121, Cl. D10-73.000.

Robbins, Roland W., Jr., to SAV Solar Systems, Inc. Solar water heater. 258,141, 2-3-81, Cl. D23-86.000.

Robert, Tony. Holder for a pet food bowl. 258,152, 2-3-81, Cl. D30-13.000.

Robert, Tony. Coupler for pet food bowls. 258,153, 2-3-81, Cl. D30-13.000.

Rocchia, Peter A., to Wicker Works, The. Armchair. 258,102, 2-3-81, Cl. D6-68.000.

Rovex Limited: *See*—
Burdock, Patrick T. A., 258,164, Cl. D21-129.000.
Burdock, Patrick T. A., 258,165, Cl. D21-132.000.

Santaw, Peter M.: *See*—
Orenstein, Henry; Decker, George; Schlau, Floyd E.; Patterson, Maureen; Santaw, Peter M.; and D'Aguanno, Steven R., 258,162, Cl. D21-121.000.
Orenstein, Henry; Decker, George; Schlau, Floyd E.; Patterson, Maureen; Santaw, Peter M.; and D'Aguanno, Steven R., 258,163, Cl. D21-122.000.

SAV Solar Systems, Inc.: *See*—
Robbins, Roland W., Jr., 258,141, Cl. D23-86.000.

Schlau, Floyd E.: *See*—
Orenstein, Henry; Decker, George; Schlau, Floyd E.; Patterson, Maureen; Santaw, Peter M.; and D'Aguanno, Steven R., 258,162, Cl. D21-121.000.
Orenstein, Henry; Decker, George; Schlau, Floyd E.; Patterson, Maureen; Santaw, Peter M.; and D'Aguanno, Steven R., 258,163, Cl. D21-122.000.

Schoch, Robert R. Simulative aerial toy. 258,157, 2-3-81, Cl. D21-82.000.

Schulz, Galyn A.: *See*—
Elchook, Frank, Jr.; and Schulz, Galyn A., 258,154, Cl. D59-2.00C.

Shoei Safety Helmet Corporation: *See*—
Kamata, Eitaro, 258,127, Cl. D12-182.000.

Simpson, Danny E.: *See*—
Williams, D. Michael; and Simpson, Danny E., 258,160, Cl. D21-114.000.

Sinn, Hans J., to Pitney Bowes Inc. Postal scale. 258,122, 2-3-81, Cl. D10-91.000.

Steven Manufacturing Company: *See*—
Klawitter, Ronald R., 258,161, Cl. D21-120.000.

Stevenson, George L. Canopied grill container. 258,107, 2-3-81, Cl. D7-107.000.

Sturman, Oded E.; and Grill, Benjamin, to Hydronic Systems, Inc. Sprinkler controller. 258,140, 2-3-81, Cl. D23-38.000.

Sumbeam Corporation: *See*—
Vieceli, Joseph L., 258,106, Cl. D7-94.000.

Sylvester, Gordon: *See*—
Genaro, Donald M.; and Sylvester, Gordon, 258,131, Cl. D14-93.000.

Taylor, Sherman E. Side shield for motorcycle. 258,126, 2-3-81, Cl. D12-114.000.

Teletype Corporation: *See*—
Genaro, Donald M.; and Sylvester, Gordon, 258,131, Cl. D14-93.000.

Trans-World Manufacturing Corp.: *See*—
Franklin, Robert P.; and Dewees, John G., 258,099, Cl. D6-24.000.

Trewax Company: *See*—
Levy, Michael L., 258,132, Cl. D15-52.000.

Vieceli, Joseph L., to Sumbeam Corporation. Hot dog steamer. 258,106, 2-3-81, Cl. D7-94.000.

Wicker Works, The: *See*—
Rocchia, Peter A., 258,102, Cl. D6-68.000.
Widener, G. Paul. Multitone drum. 258.134. 2-3-81. Cl. D17-22.000.
Williams, D. Michael; and Simpson, Danny E., to Johnson & Johnson. Combined toy harbor, village and figure therefor. 258,160, 2-3-81, Cl. D21-114.000.
Wistrand, John, to Clairol Incorporated. Holder for dental plaque detection system. 258,097, 2-3-81, Cl. D3-39.000.
Wohleb, Robert H.: *See*—
Jennings, Walter G.; Wohleb, Robert H.; and Wohlers, Norman W., 258,147, Cl. D24-56.000.
Wohlers, Norman W.: *See*—
Jennings, Walter G.; Wohleb, Robert H.; and Wohlers, Norman W., 258,147, Cl. D24-56.000.
Wood, Alexander C. Clip. 258,138, 2-3-81, Cl. D22-22.000.
Yamaha Hatsudoki Kabushiki Kaisha: *See*—
Horikoshi, Tatsuo, 258,129, Cl. D12-205.000.

LIST OF PLANT PATENTEES

Coward, Bob G. Chrysanthemum plant. 4,640, 2-3-81, Cl. 82.000.
Ecke, Paul, Jr.: *See*—
Suptitz, Dieter, 4,641, Cl. 86.000.
Paganelli, Frank. Nectarine tree. 4,639, 2-3-81, Cl. 41.000.
Strawn, Leslie E. Miniature rose plant. 4,636, 2-3-81, Cl. 7.000.
Strawn, Leslie E. Miniature rose plant. 4,637, 2-3-81, Cl. 9.000.
Strawn, Leslie E. Miniature rose plant. 4,638, 2-3-81, Cl. 9.000.
Suptitz, Dieter, to Ecke, Paul, Jr. Poinsettia plant. 4,641, 2-3-81, Cl. 86.000.

LIST OF DEFENSIVE PUBLICATIONS

APPLICANTS TO WHOM

DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 3RD DAY OF FEBRUARY, 1981

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

Brooks, Dennis G.: *See*—
Hsieh, Shuang-shii; and Brooks, Dennis G., T100,302, Cl. 209-166.000.
Dix, Robert. Production of carbon fibers by the direct carbonization of polybenzimidazole fiber. T100,303, 2-3-81, Cl. 423-447.400.
Hsieh, Shuang-shii, to Tennessee Valley Authority. Phosphate flotation with dibasic acids. T100,301, 2-3-81, Cl. 209-166.000.
Hsieh, Shuang-shii; and Brooks, Dennis G., to Tennessee Valley Authority. Phosphate flotation with tribasic acids. T100,302, 2-3-81, Cl. 209-166.000.
Tennessee Valley Authority: *See*—
Hsieh, Shuang-shii, T100,301, Cl. 209-166.000.
Hsieh, Shuang-shii; and Brooks, Dennis G., T100,302, Cl. 209-166.000.

CLASSIFICATION OF PATENTS

ISSUED FEBRUARY 3, 1981

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

12 4,247,957
187 4,247,958
212 4,247,959
424 4,247,960

CLASS 5

442 4,247,961
450 4,247,962
4,247,963

CLASS 8

116 P 4,248,595
127.6 4,248,596
128 A 4,248,590
485 4,248,592
532 4,248,593
583 4,248,594

CLASS 13

25 4,249,032

CLASS 15

162 4,247,964

CLASS 16

145 4,247,965

CLASS 23

230 HC 4,248,599
230 M 4,248,598
230 R 4,248,597
293 R 4,248,600
4,248,601
4,248,602

CLASS 24

116 R 4,247,966
143 R 4,247,967
205.13 C 4,247,968

CLASS 26

18.6 4,247,969

CLASS 29

2 4,247,970
4.5 B 4,247,971
156.63 4,247,972
402.11 4,247,973
407 4,247,974
527.4 4,247,976
566.1 4,247,977
596 4,247,978
611 4,247,979
742 4,247,980
845 4,247,981

CLASS 30

41 4,247,982
124 4,247,983
296 R 4,247,984

CLASS 33

178 F 4,247,985
494 4,247,986

CLASS 34

1 4,247,987
4,247,988
20 4,247,989
23 4,247,990
35 4,247,991
91 4,247,992
156 4,247,993

CLASS 36

103 4,247,996

CLASS 37

82 4,247,997

CLASS 38

102.2 4,247,998

CLASS 40

359 4,247,999
530 4,248,000
602 4,248,001

CLASS 43

27.4 4,248,002
44.8 4,248,003
54.5 R 4,248,004
112 4,248,005

CLASS 44

10 J 4,248,603

CLASS 46

17 4,248,006
79 4,248,007
88 4,248,008
202 4,248,009
228 4,248,010
254 4,248,011
262 4,248,012

CLASS 47

59 4,248,013
86 4,248,014

CLASS 48

197 R 4,248,604
4,248,605

CLASS 49

70 4,248,015
200 4,248,016
493 4,248,017
504 4,248,018

CLASS 51

45 4,248,019
307 Re.30,503
4,248,606

CLASS 52

185 4,248,020
404 4,248,021
473 4,248,022
506 4,248,023
632 4,248,024
731 4,248,025
749 4,248,026

CLASS 53

244 4,248,027
248 4,248,028
4,248,029
397 4,248,030
556 4,248,031
570 4,248,032

CLASS 55

33 4,248,607
43 4,248,608
89 4,248,609
101 4,248,610
238 4,248,611
350 4,248,612
394 4,248,613

CLASS 56

8 4,248,033
17.2 4,248,034

CLASS 57

6 4,248,035
227 4,248,036
263 4,248,037
336 4,248,038

CLASS 60

39.05 4,248,039
39.27 4,248,040
226 R 4,248,041
243 4,248,042
325 4,248,043
398 4,248,044
537 4,248,045
567 4,248,046
602 4,248,047
645 4,248,048

CLASS 62

2 4,248,049
6 4,248,050
115 4,248,051
117 Re.30,499
140 4,248,052
158 4,248,053
175 4,248,054
196 C 4,248,055
238 E 4,248,056
280 4,248,057
324 A 4,248,058
324 D 4,248,059
387 4,248,060
419 4,248,061

CLASS 64

1 S 4,248,062

CLASS 65

3 A 4,248,614
27 4,248,615
335 4,248,616

CLASS 66

4 4,248,063
192 4,248,064
237 4,248,065

CLASS 68

43 4,248,066

CLASS 70

58 4,248,067
134 4,248,068
160 4,248,069
252 4,248,070
456 R 4,248,071

CLASS 71

42 4,248,617
92 4,248,618
4,248,619
4,248,620
120 4,248,621
121 4,248,622

CLASS 72

8 4,248,072
243 4,248,073
247 4,248,074
335 4,248,075
349 4,248,076
391 4,248,077
457 4,248,078
465 4,248,079

CLASS 73

146.8 4,248,080
151 4,248,081
170 R 4,248,082
190 R 4,248,083
191 4,248,084
290 V 4,248,087
319 4,248,088
356 4,248,089
620 4,248,090
631 4,248,091
643 4,248,092
656 4,248,093
760 4,248,094
771 4,248,095
828 4,248,096
842 4,248,097
861.06 4,248,085
861.09 4,248,086
861.24 4,248,098
861.36 4,248,099
4,248,100

CLASS 74

10 R 4,248,101
10.33 4,248,102
103 4,248,103
569 4,248,104
710.5 4,248,105
868 4,248,106

CLASS 75

35 4,248,623
38 4,248,626
41 4,248,624
4,248,625
42 4,248,627
101 R 4,248,628
122 4,248,629
135 4,248,630
257 4,248,631

CLASS 81

483 4,248,107

CLASS 82

2 R 4,248,108

CLASS 83

37 4,248,109
53 4,248,110
140 4,248,111
241 4,248,112
310 4,248,113
347 4,248,114
435.1 4,248,115
544 4,248,116
863 4,248,117

CLASS 84

1.01 4,248,118
4,248,119
1.16 4,248,120
1.19 4,248,121
4,248,122
1.26 4,248,123
192 4,248,124
280 4,248,125
299 4,248,126
314 N 4,248,127
322 4,248,128
422 R 4,248,129
434 4,248,130

CLASS 86

24 4,248,132

CLASS 91

20 4,248,133
29 4,248,134
49 4,248,135
305 4,248,136
375 R 4,248,137

CLASS 92

27 4,248,138

CLASS 98

41 R 4,248,140

CLASS 99

483 4,248,141
509 4,248,142

CLASS 100

5 4,248,143
244 4,248,144

CLASS 101

77 4,248,145
93.03 4,248,146
93.05 4,248,147
93.09 4,248,148
123 4,248,149
4,248,150
288 4,248,151

CLASS 102

27 F 4,248,152
208 4,248,153

CLASS 104

7 B 4,248,154
12 4,248,155
300 4,248,156

CLASS 105

154 4,248,157
282 R 4,248,158
308 R 4,248,159
377 4,248,160

CLASS 106

1.11 4,248,632
1.23 4,248,633
15.05 4,248,634
22 4,248,635
23 4,248,636
40 R 4,248,637
46 4,248,727
56 4,248,638
100 4,248,639
4,248,641
103 4,248,640

CLASS 108

6 4,248,161
50 4,248,162
53.3 4,248,163

CLASS 110

225 4,248,164

CLASS 112

121.28 4,248,165
122 4,248,166
158 E 4,248,168
158 R 4,248,167
255 4,248,169
318 4,248,170

CLASS 114

106 4,248,281
210 4,248,171

CLASS 116

200 4,248,172

CLASS 118

20 4,248,173
665 4,248,174

CLASS 119

51.12 4,248,175
72 4,248,176
73 4,248,177
75 4,248,178

CLASS 122

235 C 4,248,179
390 4,248,180
483 4,248,181

CLASS 123

1 A 4,248,182
51 B 4,248,183
65 R 4,248,184
73 R 4,248,185
169 PA 4,248,189
180 R 4,248,190
188 S 4,248,191
256 4,248,192
341 4,248,193
357 4,248,194
382 4,248,188
416 4,248,195
489 4,248,196
557 4,248,197
559 4,248,198
568 4,248,186
4,248,187
4,248,199
644 4,248,200
647 4,248,201

CLASS 124

16 4,248,202

CLASS 126

77 4,248,203
121 4,248,204
143 4,248,205
4,248,206
348 4,248,207
409 4,248,208
417 4,248,209
444 4,248,210
446 4,248,211
449 4,248,212

CLASS 128

2.1 B Re.30,502
6 4,248,213
7 4,248,214
57 Re.30,500
60 4,248,215
80 C Re.30,501
132 D 4,248,216
204.17 4,248,217
204.18 4,248,218
205.17 4,248,219
206.19 4,248,220
207.15 4,248,221
4,248,222
214 C 4,248,223
214 R 4,248,224
218 C 4,248,225
229 4,248,226
232 4,248,227
234 4,248,228
245 4,248,229
268 4,248,230
303.14 4,248,231
305 4,248,232
323 4,248,233
348 4,248,234
349 B 4,248,236
349 R 4,248,235
419 P 4,248,237
419 PG 4,248,238
635 4,248,239
671 4,248,240
4,248,241
678 4,248,242
696 4,248,243
706 4,248,244
719 4,248,245
765 4,248,246
798 4,248,247

CLASS 130

27 HA 4,248,248
27 T 4,248,249

CLASS 131

17 R 4,248,250
4,248,251
140 P 4,248,252
146 4,248,253

CLASS 132

7 4,248,591
84 D 4,248,254

CLASS 134

2 4,248,642

CLASS 135

5 R 4,248,255
67 4,248,256

CLASS 136

248 4,248,643
258 Re.30,504

CLASS 137

68 A 4,248,257
124 4,248,258
334 4,248,259
382 4,248,262
454.2 4,248,263
4,248,264
494 4,248,265
564.5 4,248,266
590 4,248,261
885 4,248,267
899 4,248,260

CLASS 138

26 4,248,268
30 4,248,269
45 4,248,270
89 4,248,271

CLASS 139

353 4,248,272

CLASS 140

105 4,248,273
106 4,248,274

CLASS 141

4 4,248,275
87 4,248,276
93 4,248,277
316 4,248,278
348 4,248,279

CLASS 144

3 R 4,248,280
144 R 4,248,282

CLASS 145

3.31 4,248,283
31 R 4,248,284

CLASS 149

21 4,248,644

CLASS 152

158 4,248,286
354 R 4,248,287

CLASS 156

78 4,248,646
84 4,248,647
94 4,248,648
174 4,248,649
181 4,248,650
198 4,248,651
219 4,248,652
272 4,248,653
331 4,248,654
351 4,248,655
358 4,248,656
443 4,248,657

475 4,248,658
574 4,248,659
579 4,248,660
584 4,248,661
601 4,248,645
643 Re.30,505

CLASS 162

19 4,248,662
72 4,248,663
145 4,248,664

CLASS 164

16 4,248,288
153 4,248,289
154 4,248,290

CLASS 165

4 4,248,291
50 4,248,292
51 4,248,293
104 S 4,248,294
105 4,248,295
118 4,248,296
166 4,248,297

CLASS 166

57 4,248,298
153 4,248,299
250 4,248,300
252 4,248,301
272 4,248,302
299 4,248,303
300 4,248,304
305 D 4,248,305
305 R 4,248,306
315 4,248,307
322 4,248,308

CLASS 169

47 4,248,309

CLASS 172

661 4,248,310
819 4,248,311

CLASS 174

16 R 4,249,033
52 H 4,249,034
52 R 4,249,035

CLASS 175

57 4,248,312
239 4,248,313
344 4,248,314

CLASS 176

1 4,248,665
19 LD 4,248,666
24 4,248,667
30 4,248,668

CLASS 177

50 4,248,315
4,248,316
134 4,248,317
137 4,248,318

CLASS 178

3 4,248,319

CLASS 179

1 GA 4,249,037
1 GD 4,249,038
1 GS 4,249,039
2 A 4,249,040
5 R 4,249,036
15.55 R 4,249,042
111 E 4,249,043

CLASS 180

128 4,248,320
179 4,248,321
287 4,248,322
291 4,248,323

CLASS 181

121 4,248,324
284 4,248,325

CLASS 182

185 4,248,326

CLASS 187

29 R 4,248,327

CLASS 188

73.3 4,248,328
264 G 4,248,329

CLASS 192

0.052 4,248,333
4 C 4,248,330
13 R 4,248,331
61 4,248,332

CLASS 194

4 C 4,248,334
4 D 4,248,335
97 R 4,248,336

CLASS 198

301 4,248,337
379 4,248,338
519 4,248,339
711 4,248,340
790 4,248,341

CLASS 200

1 B 4,249,056
5 A 4,249,044
15 4,249,045
61.45 R 4,249,046
61.86 4,249,047
83 F 4,249,048
144 B 4,249,050
144 R 4,249,049
147 R 4,249,051
4,249,052
153 J 4,249,053
159 B 4,249,054
4,249,055
296 4,249,057

CLASS 201

6 4,248,669

CLASS 202

99 4,248,670
228 4,248,671

CLASS 203

11 4,248,672
35 4,248,673

CLASS 204

28 4,248,674
38 A 4,248,675
56 R 4,248,676
59 R 4,248,677
4,248,678
98 4,248,679
4,248,680
103 4,248,681
114 4,248,682
129.3 4,248,683
149 4,248,684
159.22 4,248,685
184 4,248,686
192 E 4,248,688
192 P 4,248,687
195 P 4,248,712
252 4,248,689
260 4,248,715
268 4,248,690

CLASS 206

3 4,248,342
83.5 4,248,343
334 4,248,346
387 4,248,344
4,248,345
423 4,248,347
447 4,248,348
538 4,248,349
586 4,248,350
620 4,248,351

CLASS 208

8 LE 4,248,691
4,248,692
11 R 4,248,693
206 4,248,694
232 4,248,695

CLASS 209

1 4,248,696
5 4,248,697
4,248,698
144 4,248,699
212 4,248,700
363 4,248,701
455 4,248,702

CLASS 210

104 4,248,710
163 4,248,711
232 4,248,713
238 4,248,714
402 4,248,716
632 4,248,704
673 4,248,706
676 4,248,703
680 4,248,705
695 4,248,707
727 4,248,708
769 4,248,709

CLASS 211

88 4,248,352

CLASS 212

128 4,248,353

CLASS 213

100 W 4,248,354

CLASS 215

274 4,248,355
344 4,248,356

CLASS 219

10.55 F 4,249,058
69 G 4,249,059
121 LD 4,249,060
124.22 4,249,061
124.34 4,249,062
130.51 4,249,063
216 4,249,064
220 4,249,065
243 4,249,066
392 4,249,067
497 4,249,068
535 4,249,069

CLASS 220

219 4,248,357

CLASS 221

150 A 4,248,358

CLASS 222

58 4,248,359
174 4,248,360
179.5 4,248,361
505 4,248,362

CLASS 223

91 4,248,363

CLASS 224

45 AC 4,248,364
45 S 4,248,365
148 4,248,366
153 4,248,367
249 4,248,368

CLASS 225

2 4,248,369
97 4,248,370

CLASS 228

7 4,248,371
32 4,248,372
107 4,248,373

CLASS 235

92 T 4,249,070
375 4,249,071
491 4,249,072

CLASS 236

34.5 4,248,374
46 R 4,248,375
58 4,248,376
68 B 4,248,377

CLASS 237

66 4,248,378

CLASS 239

1 4,248,379
6 4,248,380
118 4,248,381
189 4,248,382
284 A 4,248,383
419.3 4,248,384
444 4,248,385
707 4,248,386

CLASS 241

5 4,248,387
99 4,248,388
101.5 4,248,389
263 4,248,390

CLASS 242

55.54 4,248,391
96 4,248,392
199 4,248,393

CLASS 244

3 4,248,394
216 4,248,395

CLASS 246

247 4,248,396

CLASS 248

138 4,248,397
220.1 4,248,398
552 4,248,399
635 4,248,400

CLASS 250

204 4,249,073
221 4,249,074
223 B 4,249,075
227 4,249,076
306 4,249,077
315.2 4,249,078
468 4,249,079
557 4,249,080
563 4,249,081
574 4,249,082

CLASS 251

7 4,248,401
11 4,248,402
85 4,248,403
307 4,248,404

CLASS 252

8.55 B 4,248,717
33 4,248,718
34 4,248,719
42.7 4,248,720
46.7 4,248,721
4,248,722
48.6 4,248,723
49.6 4,248,724
51.5 A 4,248,725
52 A 4,248,726
103 4,248,728
174.22 4,248,729
301.1 R 4,248,730
301.4 R 4,248,731
301.6 P 4,248,732
355 4,248,733
400 R 4,248,734
428 4,248,735
4,248,736
430 4,248,737
431 R 4,248,738
455 R 4,248,739
463 4,248,740
4,248,741
522 R 4,248,742

CLASS 254

10 B 4,248,405
274 4,248,406

CLASS 260

17.4 BB 4,248,743
17.4 SG 4,248,744
22 D 4,248,745
23 AR 4,248,746
23 XA 4,248,747
23.7 M 4,248,778
27 R 4,248,748
28.5 AS 4,248,749
29.1 R 4,248,752
29.1 SB 4,248,750
29.2 M 4,248,751
29.2 TN 4,248,753
29.6 E 4,248,754
29.6 TA 4,248,755
31.2 N 4,248,756
32.8 N 4,248,757
33.6 A 4,248,759
33.6 AQ 4,248,758
39 SB 4,248,760
42 4,248,761
42.22 4,248,762
4,248,763
42.33 4,248,764
42.53 4,248,765
45.75 R 4,248,766
4,248,767
4,248,768
97.7 4,248,769
104 4,248,770
146 R 4,248,772
146 T 4,248,771
148 4,248,773
154 4,248,775
165 4,248,774
173 4,248,776
191 4,248,777
239 BF 4,248,779
239.1 4,248,780
239.3 A 4,248,781
4,248,782
239.55 D 4,248,783
326.2 4,248,784
326.26 4,248,786
326.5 A 4,248,785
338 4,248,787
340.3 4,248,788
345.2 4,248,789
397.2 4,248,791
397.4 4,248,790
404.5 4,248,792
513 T 4,248,793
604 HF 4,248,802
780 4,248,805

CLASS 261

118 4,248,806

CLASS 264

18 4,248,807
22 4,248,808
30 4,248,809
43 4,248,810
46.6 4,248,811
51 4,248,812
62 4,248,813
63 4,248,814
71 4,248,815
73 4,248,816
102 4,248,817
107 4,248,818
109 4,248,819
113 4,248,820
135 4,248,821
154 4,248,822
156 4,248,823
171 4,248,824
213 4,248,825
328.14 4,248,826

CLASS 266

156 4,248,407
4,248,408
268 4,248,409

CLASS 267

60 4,248,410

CLASS 269

67 4,248,411
102 4,248,412

CLASS 270

53 4,248,413

CLASS 271

9 4,248,415
10 4,248,416
98 4,248,417

CLASS 272

62 4,248,418
71 4,248,419
126 4,248,420
130 4,248,421

CLASS 273

1 E 4,248,422
58 C 4,248,423
60 B 4,248,424
72 A 4,248,425
75 4,247,975
108 4,248,426
110 4,248,427
118 R 4,248,428
123 R 4,248,429
162 D 4,248,430
187 R 4,248,431
235 R 4,248,432
243 4,248,437
275 4,248,433
296 4,248,434
331 4,248,435
349 4,248,436

CLASS 277

84 4,248,439
224 4,248,440

CLASS 280

33.99 A 4,248,441
33.99 T 4,248,442
39 4,248,443
47.11 4,248,444
79.1 R 4,248,445
87.01 4,248,446
112 R 4,248,447
261 4,248,448
415 A 4,248,450
490 R 4,248,451
603 4,248,449
655 4,248,453
668 4,248,454
711 4,248,455
802 4,248,456

CLASS 282

7 4,248,457

CLASS 283

1 R 4,248,458

CLASS 285

319 4,248,459
363 4,248,460

CLASS 290

1 R 4,249,083
53 4,249,084
4,249,085

CLASS 292

167 4,248,452
218 4,248,461
322 4,248,462
340 4,248,463

CLASS 294

1 BA 4,248,468
9 4,248,464
19 R 4,248,465
54 4,248,466
67 R 4,248,467
78 A 4,248,469
87.2 4,248,470
88 4,248,471

CLASS 296

36 4,248,472
97 G 4,248,473
4,248,474
100 4,248,475

CLASS 297

118 4,248,476
135 4,248,477
174 4,248,478
378 4,248,479
473 4,248,480

CLASS 299

33 4,248,481
34 4,248,482
53 4,248,483

CLASS 307

10 R 4,249,086
35 4,249,087
87 4,249,088
140 4,249,089
154 4,249,090
203 4,249,091
221 D 4,249,092
232 4,249,093
277 4,249,094
350 4,249,095

CLASS 308

8.2 4,248,484
4,248,485
72 4,248,486
189 R 4,248,487
220 4,248,488

CLASS 310

15 4,249,096
51 4,249,097
183 4,249,098
218 4,249,099
312 Re.30,506
317 4,249,100

CLASS 312

296 4,248,489

CLASS 313

112 4,249,101
116 4,249,102
135 4,249,103
188 4,249,104
213 4,249,105
365 4,249,106
479 4,249,107
486 4,249,108

CLASS 315

151 4,249,109
241 P 4,249,110
360 4,249,111
382 4,249,112

CLASS 318

39 4,249,113
115 4,249,114
134 4,249,115
254 4,249,116
275 4,249,117
305 4,249,118
341 4,249,119
729 4,249,120

CLASS 322

2 R 4,249,121

CLASS 323

313 4,249,122
314 4,249,123

CLASS 324

51 4,249,124
4,249,125
52 4,249,126
57 R 4,249,127
329 4,249,128
335 4,249,129
386 4,249,130
452 4,249,131

CLASS 328

123 4,249,133

CLASS 329

205 R 4,249,134

CLASS 330

10 4,249,135
251 4,249,136
283 4,249,137

CLASS 331

1 A 4,249,138
94.5 C 4,249,140
94.5 F 4,249,141
94.5 G 4,249,143
94.5 H 4,249,142
94.5 P 4,249,139

CLASS 333

81 R 4,249,144
165 4,249,145
195 4,249,146
202 4,249,147
208 4,249,148
223 4,249,149
262 4,249,150

CLASS 335

176 4,249,151
4,249,152

CLASS 336

82 4,249,153

CLASS 337

360 4,249,154
4,249,155

CLASS 338

34 4,249,156
176 4,249,157

CLASS 339

14 R 4,248,490
17 F 4,248,491
89 M 4,248,492
97 R 4,248,493
154 A 4,248,494

CLASS 340

26 4,249,158
4,249,159
33 4,249,160
52 D 4,249,161
148 4,249,162
149 A 4,249,163
311 4,249,165
506 4,249,166
572 4,249,167
578 4,249,168
630 4,249,169
646 4,249,170
722 4,249,171
726 4,249,172
731 4,249,173
870.3 4,249,164

CLASS 343

5 EM 4,249,175
5 W 4,249,174
6.5 LC 4,249,176
7 A 4,249,177
4,249,179
7.7 4,249,178
100 CS 4,249,181
715 4,249,182
781 R 4,249,183
840 4,249,184
871 4,249,185

CLASS 346

35 4,249,186
75 4,249,187
4,249,188
4,249,189

CLASS 350

6.3 4,248,495
10 4,248,496
63 4,248,497
90 4,248,498
96.21 4,248,499
98 4,248,500
266 4,248,501
341 4,248,502
357 4,248,503
360 4,248,504

CLASS 351

6 4,248,506
7 4,248,505

CLASS 352

130 4,248,507

CLASS 353

114 4,248,508

CLASS 354

10 4,248,509
109 4,248,510
173 4,248,511
275 4,248,512
299 4,248,513
4,248,514
321 4,248,515
4,248,516

CLASS 355

1 4,248,517
3 CH 4,248,518
4,248,519
3 FU 4,248,520
3 R 4,248,521
10 4,248,522
13 4,248,523
14 E 4,248,524
14 R 4,248,526
4,248,527
4,248,528
14 SH 4,248,525
41 4,248,529
74 4,248,530
91 4,248,531

CLASS 356

1 4,248,532
238 4,248,533
350 4,248,534
4,248,535
416 4,248,536
431 4,248,537

CLASS 357

22 4,249,190
38 4,249,192
40 4,249,193
41 4,249,191
51 4,249,194
55 4,249,195
74 4,249,196

CLASS 358

10 4,249,197
13 4,249,198
19 4,249,199
22 4,249,200
24 4,249,201
36 4,249,202
50 4,249,203
55 4,249,204
60 4,249,205
86 4,249,206
108 4,249,207
164 4,249,208
167 4,249,209
4,249,210
183 4,249,211
4,249,212
4,249,213
186 4,249,214
217 4,249,215
257 4,249,216
294 4,249,217

CLASS 360

13 4,249,218
46 4,249,219
73 4,249,220
97 4,249,221
130.23 4,249,222

CLASS 361

4 4,249,223
124 4,249,224
152 4,249,225
223 4,249,226
334 4,249,227
388 4,249,228
399 4,249,229

CLASS 362

13 4,249,230
31 4,249,231
61 4,249,232
103 4,249,233
228 4,249,234

CLASS 363

2 4,249,235
87 4,249,236
150 4,249,237

CLASS 364

106 4,249,238
200 4,249,239
4,249,240
4,249,241
442 4,249,242
474 4,249,243
525 4,249,244
710 4,249,245
716 4,249,246
900 4,249,247
4,249,248

CLASS 365

36 4,249,249
230 4,249,250

CLASS 366

261 4,248,538
341 4,248,539

CLASS 368

76 4,249,251

CLASS 369

28 4,249,041
127 4,248,438

CLASS 370

100 4,249,252

CLASS 371

38 4,249,253

CLASS 375

2 4,249,180
117 4,249,254

CLASS 400

124 4,248,540
144.2 4,248,541
298 4,248,542

CLASS 401

183 4,248,543

CLASS 403

49 4,248,544
227 4,248,545

CLASS 404

25 4,248,546

CLASS 405

72 4,248,547
129 4,248,548
224 4,248,549
232 4,248,550

CLASS 406

129 4,248,551
4,248,552

CLASS 407

114 4,248,553

CLASS 408

97 4,248,554
225 4,248,555

CLASS 409

131 4,248,556
307 4,248,559

CLASS 410

27 4,248,557
104 4,248,558

CLASS 411

15 4,248,131
246 4,248,285

CLASS 414

24.5 4,248,560
4,248,561
212 4,248,562
280 4,248,563
412 4,248,564
518 4,248,565

CLASS 415

26 4,248,566
53 T 4,248,567
138 4,248,569
148 4,248,570

CLASS 416

132 B 4,248,568
175 4,248,571
228 4,248,572

CLASS 417

216 4,248,573
4,248,574

CLASS 418

93 4,248,575

CLASS 421

250 4,248,871

CLASS 422

37 4,248,827
47 4,248,828
56 4,248,829
59 4,248,830
102 4,248,831
177 4,248,832
179 4,248,833
200 4,248,834
272 4,248,835

CLASS 423

4 4,248,836
24 4,248,837
162 4,248,838
178 4,248,839
210 4,248,841
242 4,248,842
300 4,248,845
302 4,248,840
317 4,248,846
321 R 4,248,843
329 4,248,847
345 4,248,844
474 4,248,848
489 4,248,849
491 4,248,850
493 4,248,851
626 4,248,852

CLASS 424

1 4,248,853
8 4,248,854
19 4,248,855
21 4,248,856
4,248,857
4,248,858
54 4,248,859
57 4,248,860
60 4,248,861
92 4,248,862
121 4,248,863
177 4,248,864
180 4,248,865
200 4,248,866
236 4,248,867
246 4,248,868
248.5 4,248,869
248.54 4,248,870
251 4,248,872
256 4,248,873
4,248,874
263 4,248,875
267 4,248,876
4,248,877
4,248,878
269 4,248,879
270 4,248,880
273 P 4,248,881
273 R 4,248,882
274 4,248,883
4,248,884
4,248,885
278 4,248,886
283 4,248,887
306 4,248,888
308 4,248,889
309 4,248,890
316 4,248,891
317 4,248,892
324 4,248,893

CLASS 425

68 4,248,576
131.5 4,248,577
220 4,248,578
227 4,248,579
262 4,248,580
464 4,248,581
531 4,248,582
541 4,248,583
553 4,248,584

CLASS 426

3 4,248,894
4,248,895
19 4,248,896
36 4,248,897
43 4,248,898
98 4,248,899
105 4,248,900
119 4,248,901
332 4,248,902
512 4,248,903

CLASS 427

2 4,248,904
11 4,248,905
125 4,248,906
127 4,248,907
156 4,248,908
162 4,248,909
208.4 4,248,910
214 4,248,911
230 4,248,912
244 4,248,913
282 4,248,914
292 4,248,915

CLASS 428

8 4,248,916
40 4,248,917
4,248,918
4,248,919
76 4,248,920
148 4,248,921
159 4,248,922
197 4,248,923
212 4,248,924
4,248,925
253 4,248,926
284 4,248,927
286 4,248,928
288 4,248,929
315 4,248,930
4,248,931
325 4,248,932
339 4,248,933
374 4,248,934
391 4,248,935
4,248,936
414 4,248,937
4,248,938
508 4,248,939
633 4,248,940

CLASS 429

13 4,248,941
93 4,248,942
104 4,248,943
185 4,248,944
194 4,248,945
197 4,248,946

CLASS 430

5 4,248,947
4,248,948
17 4,248,949
31 4,248,950
53 4,248,951
62 4,248,952
88 4,248,953
97 4,248,954
219 4,248,955
225 4,248,956
270 4,248,957
288 4,248,958
300 4,248,959
306 4,248,960
381 4,248,961
382 4,248,962
501 4,248,963

CLASS 431

202 4,248,585
328 4,248,586

CLASS 433

4 4,248,587
11 4,248,588
80 4,248,589

CLASS 434

153 4,247,994
185 4,247,995

CLASS 435

7 4,248,964
4,248,965
43 4,248,966
106 4,248,967
129 4,248,968
176 4,248,969
253 4,248,970
4,248,971
292 4,248,972
296 4,248,973

CLASS 455

115 4,249,257
4,249,258
176 4,249,255
180 4,249,132
4,249,256
182 4,249,259
296 4,249,260
305 4,249,261
327 4,249,263
333 4,249,262
604 4,249,265
608 4,249,266
612 4,249,264

CLASS 493

4 4,248,139
416 4,248,414

CLASS 521

91 4,248,974
110 4,248,975

CLASS 525

2 4,248,976
58 4,248,977
124 4,248,978
129 4,248,979
271 4,248,980
4,248,981
4,248,982
314 4,248,983
4,248,984
327 4,248,985
359 4,248,986
366 4,248,987

CLASS 526

141 4,248,988
264 4,248,989
317 4,248,990
331 4,248,991

CLASS 528

28 4,248,992
38 4,248,993
60 4,248,994
171 4,248,995
272 4,248,996
4,248,997
296 4,248,998

CLASS 536

4 4,248,999
66 4,249,000

CLASS 542

404 4,249,001

CLASS 544

38 4,249,002
4,249,003
192 4,249,004
302 4,249,005
313 4,249,006

CLASS 546

58 4,249,007
281 4,249,008
345 4,249,009

CLASS 548

159 4,249,010
195 4,249,012
312 4,249,011

CLASS 549

35 4,249,013
49 4,249,014

CLASS 560

1 4,249,015
53 4,249,016
148 4,249,017
180 4,249,018
208 4,249,019
214 4,249,020

CLASS 562

462 4,249,021
488 4,249,022

CLASS 564

133 4,248,794
255 4,248,795
285 4,248,796
288 4,248,797
441 4,248,798
463 4,248,801
464 4,248,800
491 4,248,799

CLASS 568

17 4,249,023
47 4,248,804
477 4,248,803
608 4,249,024
667 4,249,025
750 4,249,026
763 4,249,027

CLASS 585

273 4,249,028
638 4,249,029
716 4,249,030
733 4,249,031

CLASSIFICATION OF DESIGNS

D2—	361	258,095		110	258,108		73	258,121	D17—	22	258,134		147	258,166		17	258,144
D3—	8	258,096		153	258,109		91	258,122		24	258,135		157	258,167		32	258,145
	39	258,097		161	258,110	D11—	34	258,123	D21—	25	258,156		222	258,168			258,146
	71	258,098		184	258,111		85	258,124		82	258,157		227	258,169		56	258,147
D6—	24	258,099	D8—	7	258,112		157	258,125		86	258,158	D22—	4	258,136	D25—	64	258,148
	26	258,100		301	258,113	D12—	114	258,126		101	258,159		19	258,137	D27—	27	258,149
		258,101		349	258,114		182	258,127		114	258,160		22	258,138	D28—	9	258,150
	68	258,102		373	258,115		203	258,128		120	258,161		99	258,139		63	258,151
	146	258,103		375	258,116		205	258,129		121	258,162	D23—	38	258,140	D30—	13	258,152
		258,104	D9—	348	258,118	D14—	33	258,130		122	258,163		86	258,141			258,153
		258,105		403	258,117		93	258,131		129	258,164	D24—	9	258,142	D59—	2 C	258,154
D7—	94	258,106		457	258,119	D15—	52	258,132		132	258,165		10	258,143		2 R	258,155
	107	258,107	D10—	39	258,120		98	258,133									

CLASSIFICATION OF PLANTS

P.—	7	4,636		9	4,637			4,638		41	4,639		82	4,640		86	4,641

DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

209—	166	T100,301			T100,302	423—	447.4	T100,303									

GEOGRAPHICAL INDEX
OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 : 4,248,083
4 : 4,248,010
4,248,469
6 : 4,248,105
4,248,366
4,248,449
4,248,484
4,248,558
4,248,570
4,248,607
4,248,696
9 : Re.30,499
01 : 4,248,674
4,249,175
04 : 4,248,294
4,248,365
4,248,477
4,248,534
4,248,715
4,248,724
4,249,072
4,249,148
4,249,150
4,249,159
4,249,178
4,249,205
06 : 4,247,962
4,247,963
4,247,984
4,248,006
4,248,008
4,248,012
4,248,015
4,248,032
4,248,039
4,248,048
4,248,067
4,248,069
4,248,077
4,248,080
4,248,092
4,248,118
4,248,144
4,248,164
4,248,171
4,248,190
4,248,199
4,248,213
4,248,218
4,248,236
4,248,244
4,248,263
4,248,264
4,248,271
4,248,287
4,248,298
4,248,306
4,248,391
4,248,399
4,248,425
4,248,426
4,248,431
4,248,446
4,248,452
4,248,478
4,248,489
4,248,496
4,248,557
4,248,567
4,248,587
4,248,620
4,248,627
4,248,660
4,248,668
4,248,693
4,248,695
4,248,708
4,248,718
4,248,785
4,248,798
4,248,800
4,248,828
4,248,854
4,248,875
4,248,896
4,248,899
4,248,903
4,248,909
4,248,914
4,248,943
4,249,007
4,249,033
4,249,037
4,249,042
4,249,046
4,249,083
4,249,092
4,249,096
4,249,142
4,249,146
4,249,174
4,249,177
4,249,182
4,249,185
4,249,191
4,249,202
4,249,218
4,249,221
4,249,228
4,249,257
4,249,266
08 : 4,248,548
4,248,565
4,249,069
4,249,073
4,249,109
4,249,217
09 : Re.30,500
4,247,982
4,248,044
4,248,073
4,248,228
4,248,414
4,248,490
4,248,508
4,248,572
4,248,671
4,248,882
4,248,895
4,248,940
4,248,941
4,249,020
4,249,080
4,249,111
4,249,225
4,249,251
10 : 4,248,036
4,248,120
4,248,746
4,248,764
4,248,990
12 : 4,248,022
4,248,060
4,248,090
4,248,142
4,248,165
4,248,175
4,248,189
4,248,266
4,248,288
4,248,305
4,248,382
4,248,428
4,248,430
4,248,476
4,248,509
4,248,540
4,248,846
4,248,972
4,249,028
4,249,071
4,249,140
4,249,206
4,249,258
13 : 4,248,034
4,248,226
4,248,657
4,248,960
4,249,041
15 : 4,247,995
4,249,116
16 : 4,248,361
17 : Re.30,502
4,247,957
4,248,003
4,248,009
4,248,025
4,248,107
4,248,121
4,248,130
4,248,134
4,248,145
4,248,150
4,248,158
4,248,161
4,248,170
4,248,202
4,248,214
4,248,217
4,248,249
4,248,270
4,248,304
4,248,318
4,248,330
4,248,357
4,248,358
4,248,401
4,248,407
4,248,435
4,248,439
4,248,447
4,248,450
4,248,463
4,248,466
4,248,468
4,248,553
4,248,571
4,248,576
4,248,648
4,248,653
4,248,655
4,248,686
4,248,694
4,248,737
4,248,874
4,248,901
4,248,919
4,248,929
4,248,969
4,248,989
4,248,998
4,249,044
4,249,047
4,249,120
4,249,130
4,249,138
4,249,166
4,249,184
4,249,187
4,249,224
4,249,237
18 : 4,248,005
4,248,109
4,248,122
4,248,188
4,248,229
4,248,254
4,248,345
4,248,461
4,248,473
4,248,566
4,248,569
4,248,844
4,248,908
4,249,009
4,249,024
4,249,089
4,249,132
4,249,229
4,249,255
4,249,256
19 : 4,247,989
4,248,176
4,248,177
4,248,216
4,248,311
4,248,475
4,248,538
4,248,560
4,249,048
4,249,070
20 : 4,248,143
4,248,260
4,248,340
4,248,640
21 : 4,247,994
4,248,360
4,248,381
4,248,752
4,248,842
4,249,090
22 : 4,247,966
4,247,981
4,248,224
4,248,303
4,249,017
24 : 4,247,986
4,248,257
4,248,342
4,248,392
4,248,411
4,248,465
4,248,539
4,248,600
4,248,659
4,248,739
4,248,853
4,249,025
4,249,079
4,249,117
4,249,143
25 : Re.30,505
4,247,975
4,247,999
4,248,007
4,248,088
4,248,089
4,248,099
4,248,100
4,248,208
4,248,258
4,248,281
4,248,498
4,248,504
4,248,510
4,248,554
4,248,568
4,248,645
4,248,672
4,248,675
4,248,687
4,248,837
4,248,913
4,248,942
4,248,952
4,248,955
4,248,966
4,249,005

U.S. GOVERNMENT PRINTING OFFICE : O—1981

4,249,045
4,249,074
4,249,085
4,249,107
4,249,169
4,249,172
26 : 4,247,970
4,247,972
4,247,978
4,248,002
4,248,052
4,248,140
4,248,157
4,248,163
4,248,182
4,248,193
4,248,194
4,248,196
4,248,204
4,248,212
4,248,279
4,248,350
4,248,364
4,248,389
4,248,394
4,248,419
4,248,454
4,248,455
4,248,486
4,248,500
4,248,582
4,248,682
4,248,709
4,248,751
4,248,761
4,248,765
4,248,768
4,248,820
4,248,825
4,248,850
4,248,905
4,248,931
4,248,937
4,248,979
4,248,994
4,249,016
4,249,056
4,249,081
4,249,156
4,249,171
4,249,240
27 : 4,248,079
4,248,111
4,248,225
4,248,247
4,248,335
4,248,346
4,248,375
4,248,471
4,248,516
4,248,545
4,248,932
4,249,011
4,249,058
4,249,060
4,249,155
4,249,226
4,249,241
29 : 4,248,023
4,248,110
4,248,160
4,248,261
4,248,343
4,248,371
4,248,440
4,248,551
4,248,552
4,248,678
4,248,755
4,248,796
4,249,035
30 : 4,248,280
4,248,818
31 : 4,248,421

32 : 4,248,255
4,248,525
33 : 4,248,268
4,248,507
4,248,522
4,248,650
4,248,700
4,249,077
4,249,127
34 : 4,247,961
4,247,969
4,247,979
4,247,987
4,247,988
4,248,051
4,248,152
4,248,168
4,248,179
4,248,227
4,248,234
4,248,250
4,248,334
4,248,349
4,248,385
4,248,387
4,248,396
4,248,403
4,248,445
4,248,453
4,248,493
4,248,559
4,248,594
4,248,643
4,248,652
4,248,685
4,248,690
4,248,705
4,248,783
4,248,787
4,248,803
4,248,807
4,248,808
4,248,841
4,248,861
4,248,893
4,248,911
4,248,922
4,248,946
4,248,953
4,248,954
4,248,959
4,249,008
4,249,013
4,249,068
4,249,093
4,249,094
4,249,095
4,249,101
4,249,119
4,249,137
4,249,173
4,249,181
4,249,190
4,249,199
4,249,249
35 : 4,248,601
4,248,665
4,248,730
4,248,748
36 : Re.30,503
4,247,958
4,247,959
4,248,031
4,248,063
4,248,071
4,248,078
4,248,094
4,248,124
4,248,126
4,248,127
4,248,128
4,248,137
4,248,162
4,248,167

4,248,169
4,248,209
4,248,210
4,248,220
4,248,231
4,248,256
4,248,274
4,248,282
4,248,283
4,248,291
4,248,336
4,248,363
4,248,380
4,248,398
4,248,418
4,248,420
4,248,422
4,248,433
4,248,436
4,248,437
4,248,448
4,248,492
4,248,501
4,248,512
4,248,519
4,248,528
4,248,531
4,248,546
4,248,547
4,248,564
4,248,614
4,248,642
4,248,688
4,248,698
4,248,711
4,248,719
4,248,721
4,248,745
4,248,762
4,248,784
4,248,856
4,248,857
4,248,858
4,248,894
4,248,902
4,248,917
4,248,918
4,248,925
4,248,927
4,248,962
4,248,964
4,248,970
4,248,971
4,249,034
4,249,040
4,249,088
4,249,103
4,249,141
4,249,147
4,249,193
4,249,238
37 : 4,247,992
4,248,064
4,248,114
4,248,174
4,248,241
4,248,251
4,248,253
4,248,278
4,248,309
4,248,408
4,248,460
4,248,543
4,248,597
4,249,059
39 : 4,248,018
4,248,030
4,248,040
4,248,076
4,248,096
4,248,104
4,248,112
4,248,115
4,248,123

4,248,125
4,248,135
4,248,141
4,248,159
4,248,178
4,248,184
4,248,207
4,248,275
4,248,286
4,248,290
4,248,297
4,248,348
4,248,354
4,248,369
4,248,373
4,248,379
4,248,383
4,248,397
4,248,402
4,248,432
4,248,434
4,248,443
4,248,444
4,248,457
4,248,459
4,248,474
4,248,488
4,248,584
4,248,606
4,248,611
4,248,615
4,248,616
4,248,626
4,248,662
4,248,679
4,248,722
4,248,728
4,248,729
4,248,732
4,248,743
4,248,744
4,248,766
4,248,767
4,248,805
4,248,826
4,248,827
4,248,936
4,248,944
4,248,950
4,248,986
4,248,988
4,249,067
4,249,075
4,249,154
4,249,164
4,249,170
4,249,189
4,249,223
4,249,233
40 : 4,248,004
4,248,046
4,248,049
4,248,087
4,248,265
4,248,301
4,248,494
4,248,561
4,248,692
4,248,717
4,248,735
4,248,738
4,248,747
4,248,758
4,248,799
4,249,026
4,249,030
4,249,125
41 : 4,248,131
4,248,132
4,248,203
4,248,332
4,248,390
4,248,451
4,248,532

4,248,589
4,248,613
4,249,112
4,249,128
4,249,133
42 : 4,247,968
4,247,973
4,247,974
4,248,053
4,248,055
4,248,074
4,248,075
4,248,148
4,248,206
4,248,223
4,248,276
4,248,295
4,248,317
4,248,325
4,248,327
4,248,338
4,248,404
4,248,472
4,248,605
4,248,646
4,248,647
4,248,661
4,248,669
4,248,697
4,248,703
4,248,714
4,248,733
4,248,753
4,248,777
4,248,792
4,248,797
4,248,824
4,248,832
4,248,864
4,248,935
4,248,975
4,248,977
4,248,980
4,248,981
4,248,982
4,248,983
4,248,984
4,249,021
4,249,032
4,249,049
4,249,051
4,249,052
4,249,065
4,249,097
4,249,108
4,249,115
4,249,126
4,249,167
4,249,196
4,249,214
4,249,230
43 : 4,249,151
4,249,152
44 : Re.30,501
45 : 4,247,967
4,248,013
4,248,029
4,248,037
4,248,062
4,248,205
4,248,353
4,248,706
4,249,118
46 : 4,248,406
47 : 4,248,026
4,248,180
4,248,197
4,248,352
4,248,359
4,248,367
4,248,374
4,248,464
4,248,840
4,249,244

48 : Re.30,504
4,247,985
4,248,017
4,248,081
4,248,138
4,248,219
4,248,299
4,248,300
4,248,302
4,248,307
4,248,308
4,248,310
4,248,314
4,248,324
4,248,368
4,248,384
4,248,485
4,248,497
4,248,513
4,248,521
4,248,549
4,248,585
4,248,599
4,248,604
4,248,680
4,248,681
4,248,683
4,248,689
4,248,741
4,248,759
4,248,811
4,248,838
4,248,904
4,249,113
4,249,123
4,249,131
4,249,194
4,249,247
49 : 4,248,084
4,248,424
4,248,816
4,248,839
51 : 4,247,964
4,247,991
4,248,000
4,248,043
4,248,050
4,248,054
4,248,058
4,248,211
4,248,252
4,248,272
4,248,427
4,248,581
4,248,630
4,248,707
4,248,851
4,248,916
4,249,188
53 : 4,247,998
4,248,019
4,248,042
4,248,093
4,248,151
4,248,267
4,248,296
4,248,326
4,248,395
4,248,716
4,248,939
4,249,139
54 : 4,248,082
4,248,795
55 : 4,248,033
4,248,147
4,248,173
4,248,239
4,248,331
4,248,388
4,248,458
4,248,578
4,248,791
4,248,897
4,249,110

DESIGN PATENTS

1 : 258,150
6 : 258,156
258,158
01 : 258,110
06 : 258,100
258,101
258,102
258,118
258,123
258,135
258,136

258,140
258,141
258,147
258,168
258,169
09 : 258,097
258,122
12 : 258,103
258,104
258,105

258,108
17 : 258,106
258,124
258,137
258,149
18 : 258,107
19 : 258,159
25 : 258,130
258,145
258,146

26 : 258,128
258,151
27 : 258,143
29 : 258,111
258,112
258,142
258,161
30 : 258,095
34 : 258,099
258,116

258,131
258,139
258,162
258,163
36 : 258,098
258,119
258,121
258,144
258,155
37 : 258,157

39 : 258,117
40 : 258,126
42 : 258,154
44 : 258,113
258,115
48 : 258,114
258,134
258,152
258,153
54 : 258,125

PLANT PATENTS

06 : 4,636
4,637
4,638
12 : 4,640
53 : 4,639

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01 : T100,301
T100,302
34 : T100,303

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